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## ORIGINAL LECTURES.

ON SOME OF THE PROBLEMS TO BE SOLVED  
BY PHARMACO-PHYSIOLOGY,

WITH A NEW OUTLINE CLASSIFICATION OF  
PHARMACOLOGY.

*A Lecture*

*Delivered before the advanced class of students in physiology in the  
Biological Laboratory of the Johns Hopkins University,  
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GENTLEMEN: In response to an invitation to speak before you on some of the problems to be solved by experimental physiology, I have selected the subject of the physiological action of drugs, not only because it has interested me for a number of years, but also because it is one which will illustrate to you better than any other some of the applications of that experimental science, in the practice of which you are now being drilled and educated.

The study of the physiological action of drugs, however, forms but a part of experimental pharmacology; and, therefore, before proceeding to treat of the special subject of this lecture I have deemed it most desirable, for several reasons, to say a few words with regard to pharmacology in general.

I do this not merely for the purpose of calling your attention to the important position which pharmacology itself has assumed within late years among other sciences, but also in order to enable you better to understand and realize the close and intimate connection which exists between it and physiology, as well as other sciences, with which it is more or less intimately connected.

The term pharmacology conveys, perhaps, to some of you but a vague, indefinite idea of a certain knowledge of drugs, and their action upon the animal organism, necessary though it be for the physician to possess, otherwise of very little general interest. I hope, however, to convince you that pharmacology, in the widest sense, is not only a necessary accomplishment of the physician, but also that it is full of interest to the general biologist.

Being largely dependent on chemistry and physiology, as a separate science, it must naturally be looked upon as of rather recent date, though its name is as old as that of medicine itself. Unlike other sciences, it cannot be considered a simple outgrowth of one mother science, or as a more highly specialized branch of any one single science, as, for instance, pathology is in its relation to physiology, or, as the latter may be regarded, an off-spring of anatomy; but, on the contrary, it includes and harmoniously unites several of these, making them all subservient to its peculiar end.

The classifications and subdivisions of pharmacology which we find in some of our best text-books even at the present day can, in our opinion, hardly be looked upon as at all satisfactory, much to the disadvantage of both teacher and student, but especially the latter. As pharmacology is increasing more and more in importance, a more concise and comprehensive classification and subdivision of this subject is becoming with every day more and more of a desideratum.

Having had under my charge the National Collection of Drugs at Washington during the past three years, which is perhaps the most extensive and complete collection of any we possess in this country, and having, besides, been more or less actively engaged in the investigation of the action of drugs during the same period, the question of the desirability of a new classification has frequently forced itself upon my mind, and a very puzzling one it is, too. Much might be said as to the advantages and disadvantages of the old standard division of the subject into materia medica and therapeutics, or that into pharmacology, materia medica, and therapeutics; but, without taking up your time in criticising the old, allow me to invite you to look at a new one.

This classification seems to me a considerable improvement over the old, and would, if accepted, undoubtedly do much to bring order into what, it may be said, is chaos now. The latter is more especially true for the minds of the students of this department of medicine.

Beginning with the definition of the term pharmacology itself, I need scarcely remind you of the fact that it is a word, like a great many others, which has been derived from the Greek, and simply means a knowledge of the substances known as drugs and employed as remedies. This term forms a very happy expression for the subject under consideration, and is consequently retained in this classification, as including everything relating to the subject.

The first great subdivision of pharmacology into (1) descriptive, and (2) experimental, is, I think, equally natural, expressing, as it does, the two mainsprings from which all our knowledge is derived, and as indicating, at the same time, the two main lines along which pharmacology must be studied and extended.

Since all those substances which ordinarily we call remedies are derived from either of the three natural kingdoms, descriptive pharmacology, furthermore, might be conveniently treated of under the three following heads, namely: Pharmacology-mineralogy, pharmacobotany, and pharmacozoology. By descriptive pharmacology, and, as is indicated by the terms of its three subdivisions, we would, therefore, include not only a superficial acquaintance with the mere external or physical characteristics of the drugs derived from these three sources, a branch of pharmacology hitherto designated by the term pharmacognosy, but a more profound knowledge of the significance of the princi-

ples of mineralogy, botany, and zoölogy in their relation to those substances which are derived from them.

I will illustrate what is meant by these terms by defining very briefly the term pharmaco-botany, choosing this one because it forms the best example, and most of the drugs now used are derived from the vegetable kingdom. I hold that without a knowledge of botany and its principles, or, in other words, the biology of plants, a sound knowledge of drugs is impossible. The mere enumeration of the outward appearances of roots, stems, leaves, and flowers, of the different plants which furnish us with drugs, may perhaps sound like music to some, but it is at best music without a soul or expression. It is still within my recollection when true roots, rhizomes and tubers were all included under the head of "radix," simply for the reason that they grew under ground. The fact that we now distinguish radices, rhizomata and tubera, I need not tell you is due to a study of their morphology, which distinguishes plainly and concisely one from the other; hence, it must be evident that without a knowledge of plant morphology, pharmacognosy is a mere mechanical accomplishment of the memory, and without a scientific basis.

We know, furthermore, that as we pass from the cryptogams on to the flowering plants, different, and at the same time characteristic chemical constituents are found, which are peculiar to the different classes and genera; and not only so, but each individual plant, in accordance with its different stages of development, contains different chemical constituents. The chemical constituents of plants, however, are the products of their physiology, which becomes more complicated and perfect in plants as well as animals as we pass from the lower to the higher orders. Hence, without a knowledge of plant physiology we should find ourselves without a guide as to what kind of substances we should expect to find in this or the other plant. Vegetable morphology and physiology are, therefore, necessary accomplishments of the pharmaco-botanist and the general pharmacologist.

The term "experimental pharmacology," forming the second main division in this classification, is here made to include all that knowledge regarding drugs which is derived directly from experiments made in the laboratory. The experiments, however, made with drugs in the laboratory, being of necessity either physical, chemical, physiological, or pathological, the four subdivisions of this part of our science into pharmacophysics, pharmaco-chemistry, pharmaco-physiology, and pharmaco-pathology, seem to follow quite naturally.

Under the head of pharmaco-chemistry, it would seem desirable to include not only a knowledge of the means and methods by which drugs are obtained from their natural sources (pharmacy), but also a practical knowledge of the far more important and complex problems of analyzing these substances and ascertaining, so far as can be done at present, the chemical constitution of them, with the view of preparing them artificially, and of artificially altering their composition in accordance with the demands of pharmaco-therapy.

By "pharmaco-physiology," we mean to designate that part of pharmacology which deals with all those most intricate and important problems bearing upon the action of drugs upon the normal, living animal organism

and its various parts; it has, furthermore, for its object the scientific explanation of such action; it is the greatest enemy of empirical pharmacology. The pharmacophysiolgist studies the relation which exists between the chemical constitution of a remedy and its physiological action, and it is in this field of investigation more especially, that we may look for the production of the most exact and the most important results in the near future. Without a knowledge of the chemical constitution and physiological action of those substances which we call remedies, their administration in disease cannot be said to rest on anything like a scientific basis, but must be purely empirical, and the good effect which, in some cases, it produces, must be looked upon more as a fortunate circumstance than a logical sequence.

By the term "pharmaco-pathology" it is intended to designate that branch of pharmacology which has to deal with the study of the action of drugs on the animal organism in a state of disease, and under this head both man and animals might be included. This division of the subject, therefore, is made to comprise both human and comparative pharmaco-pathology, and its laboratory is the hospital.

From what has been said, it is evident that the practical or experimental pharmacologist must be master, at least to a certain extent, of chemistry, physiology, and pathology; that his laboratory, to be complete, must be equipped with chemical and physiological apparatus, and be in close intimate relations with a well-organized and well-disciplined hospital and, if possible, also with a hospital for the treatment of the diseases of the lower animals. It is and must be admitted that the administration of drugs in disease, even in this enlightened age, is to a large extent still experimental, and that part of it, which cannot be called experimental, is empirical. Those who would reject as inhuman, experiments with drugs on the lower animals, would indeed do well to remember that they themselves at any moment, and quite unknowingly, may become the willing victims of such experimentation at the hands of much more ignorant experimenters than are usually allowed to engage in such experimentation on frogs, rabbits, and dogs. The pharmaco-pathologist, therefore, studying the action of drugs principally upon man in a state of disease, performs the most responsible part of the duties of the general pharmacologist. He should, accordingly, undertake his part of the task only with the aid of all the light which chemistry and physiology have already thrown upon the nature and action of the remedy which he is about to administer, with the final aim of relieving human suffering, or even with a view of saving valuable human lives.

There are, however, also remedial agents, such as electricity, heat, cold, water, climate, condensed and rarefied air, gymnastics, and massage, which are of considerable importance in the treatment of disease, and a classification of the subject of pharmacology, claiming to be complete, cannot afford to set these aside. These being mainly physical agents, I have thought it best to include them all under the term pharmacophysics.

There still remains to be defined that most august term, "pharmacotherapy," or, the science of curing disease by means of remedies. What shall we do with it? Up to the present we can hardly speak of pharmacotherapy as being more than an ideal; it is a science of

the future much more than of the present, to be established by experimental pharmacology. It will not be until experimental pharmacology has placed in our possession a much more accurate knowledge of the chemical nature, and of the action of drugs, in both normal and pathological states, that we have any right to claim as ours the knowledge of the cure of disease by means of remedies. Pharmacotherapy, as indicated by our classification, is applied pharmacology, it is the practical outcome of the latter, and, although the result of experimental pharmacology, it is itself, or should be, placed *beyond the range of experimentation*.

To sum up briefly, pharmacology may be said to have for its purpose the study and investigations leading to a perfect knowledge of drugs and their actions; the mineral, vegetable, and animal kingdoms are the natural sources from which these are derived; physics, chemistry, physiology, and pathology are the means which it employs in the determination of their properties and pharmacotherapy, or the knowledge of the cure of disease by scientific methods, is its great aim and end.

Pharmacophysiology, then, according to the definition above attached to this term, has for its object the scientific study and investigation of the action of drugs on the normal living animal organism and its various parts.

It would, of course, require a whole course of lectures to treat of this subject in an exhaustive manner, and I have only time to speak of a few of the more important problems which are now before the pharmacophysiological. One of these, no doubt, is the study of the relation which exists between the chemical constitution of certain substances and their physiological action.

Assuming that you all know, more or less, of the fundamental principles upon which rests our present classification of the elements into definite and related groups, and that you are, furthermore, acquainted with the circumstances which led to the discovery of the metals gallium, germanium, and scandium, which were all accurately described by Mendeleff before being discovered to fill a certain gap in a group, it must likewise be the great and final object of the pharmacologist to obtain such a knowledge of the existing relations between the chemical and physical characters of substances, and their actions upon the living organism that we may be able to predict their actions with certainty.

Mercury and calcium, at first sight certainly, do not resemble one another very much, and yet it has been shown by Provost that in acute poisoning by mercury, the calcareous matters disappear from the bones and in the process of elimination by the kidneys, produce calcification of these organs.

We find that each element and each of its various compounds has chemical reactions special to itself by which it can be recognized and distinguished from all others. The number of these chemical reactions is, therefore, very large, but there are a few which are common to a large number of the elements.

We shall find that something similar occurs in their physiological reactions, just as we can divide and subdivide the elements and their compounds into groups and subgroups by a careful study and comparison of their chemical reactions, so we may also divide and classify drugs according to their physiological reactions.

In the language of Dr. Lauder Brunton, the physiological reactions which occur between the elements and their compounds and the tissues of the body can be subdivided into large groups. Thus, we find that a very large number of substances, when used in large quantity paralyze muscles and motor nerves. This large group may again be subdivided into those which paralyze muscle while affecting the nerves but slightly, and those which paralyze the nerves and leave the muscle uninjured.

Another large group is that which acts especially on nerve-centres, and has little effect either on muscle or motor nerves. This group contains subgroups of substances which affect the brain, medulla, or spinal cord by exciting, paralyzing, or disturbing their functions.

Another group is that which chiefly affects the circulatory organs, and still another that which influences the secretions, with subgroups of substances affecting more particularly the secretory activity of the sweat glands, mammary glands, the salivary or intestinal glands, the liver, or the kidneys.

As a very striking instance and as one well calculated to impress upon you the intimate and, at the same time, important relation between physiological discoveries and pharmacological progress, I may cite the following, viz.: Those of you who have lately had the good fortune of listening to the very interesting lectures given in his laboratory by Dr. W. H. Howell, on the subject of "Secretion," are well acquainted with the brilliant results obtained by Heidenhain and his pupils as regards glandular function. Based mainly on these recent advances in physiological science, pharmacologists, it seems to me, are already beginning to turn their attention to the study of the action of drugs upon glandular activity, and some far-reaching results in this line of research may be looked for in the near future. For instance, it is a fairly well-settled question in physiology that the epithelia lining the convoluted tubules of the kidneys are the structures principally concerned in the excretion of the solid constituents of the urine, and that the epithelium lining or covering the glomeruli is the tissue chiefly engaged in the secretion of the watery constituents of the urine; blood pressure, *ceteris paribus*, taking a subordinate position to cellular activity and not a primary one as was formerly supposed to be the case.

Dr. von Schröder, of Strassburg, Germany, in a beautiful series of experiments, has succeeded in conclusively demonstrating, at least to my mind, the fact that caffeine, injected into the circulation, gives rise to a much increased flow of normal urine. From our knowledge of the physiological activity of this organ and his experiments, there is but one conclusion possible, and that is, that caffeine, in some way, exercises a stimulatory influence upon the epithelial lining of the convoluted tubules, and perhaps also that lining the capsule.

A number of questions at once arise, and since they attach themselves almost naturally to the one under consideration, we cannot do better than discuss a few of these, inasmuch as they seem to me particularly well intended to illustrate to you the kinds of problems which the pharmacophysiological has to solve, and the close and intimate relation they bear to physiology.

Although I have, as yet, seen no reference made to any of these which will here be mentioned, they must



necessarily occur to any one who thinks at all on what he reads. So far as is known up to the present, renal secretion is not excited by the stimulation of any nerves which would correspond to the so-called secretory nerves in other glands; and the kidney, therefore, differs in this respect from the salivary and sweat glands, both of which can be excited to functional activity by the stimulation of certain efferent nerves.

We must now ask ourselves: Does caffeine affect these glands similarly? and if so, how does it do so? If it does so, does it effect its results by influencing secretory nerve structures, or does it produce increased secretion through its direct action on glandular epithelium? In case that caffeine should be found to produce an increased flow of saliva by either stimulating secretory nerve-structures or the glandular epithelium, have we here a possible argument in favor of the presence of secretory nerve-fibres in the kidneys?

Again, atropin puts a stop to the secretory activity of salivary glands, because, as we say, it paralyzes the terminations of the secretory nerves in these glands, and the question at once arises, in consideration of the above facts, Does atropin have the same effect upon the kidney? and if not so, would we here have an argument in favor of the absence of secretory nerves in these organs?

All these are questions of vital importance, and must be and will be answered in the near future by some one; they well illustrate the nature of those problems which the pharmac-physiologist has to deal with, as well as the intimate relations existing between himself and the physiologist.

There are perhaps objections made by some to the results obtained by von Schröder. There are, as a rule, many more objectors than experimenters, and if there is any possible fault or flaw in von Schröder's method of experimentation, let us see what it might be, for sooner or later we will be called upon to answer such objections. Von Schröder tells us that he chloralized his rabbits before he injected his caffeine, in order to eliminate as much as possible the stimulating influence of caffeine on the vasomotor centre in the medulla. According to experiments by Binz and Mayer, chloral, trichlor-acetic acid—in fact, all easily decomposable halogen derivations of certain organic substances—by setting their chlorine, bromine, or iodine free, depress, or, for the time being, may even totally paralyze cellular activity. From this influence, according to Binz and Mayer, neither vegetable nor animal cells are exempt. It is evident, therefore, that, providing Binz and Mayer are correct, the results obtained by Schröder may be misleading. In my opinion, these objections if even they are well founded, would impair the value of von Schröder's results in a certain degree only. All that can be maintained against them is, that his standard of comparison is a subnormal rather than a normal one, while the interesting and principal fact remains, namely, that caffeine arouses the renal epithelium to activity, whether it be in a normal or subnormal condition at the time of its exposure to the influence of caffeine.

The physiological action of any drug depends, to a great extent, not only on its general affinities for certain classes of tissues, but also upon its peculiar affinity or power of acting on one tissue or organ first, and the

organ thus affected, through its functional activity, being modified, may greatly alter the effects of the same drug on others.

As a very good example of this we may take the effects produced by very large and moderate doses of veratrine on the frog. A moderate dose will produce great stiffness of the muscles, while a very large dose may have comparatively little effect. Yet, if the large dose were applied directly to the muscles, it would act more powerfully than the moderate dose. The reason why it does not do so in the living body is, that the circulation stops; and, therefore, the poison not being conveyed to them, has no action on the muscles.

With regard to the relation existing between atomic weight and physiological action, we have as yet no very clear conception, so far as the results attained from experiments in that direction allow us to judge. There is, however, a field opened to the investigating pharmacologist which, as experiments tend to show, is promising of great results, and this consists in the study of the relation which exists between chemical constitution and the physiological action of certain substances. It has been shown by the discoveries of Crum Brown, Fraser, and Schraff, that by artificially modifying the chemical constitution of a drug, it is possible to modify also its physiological action, and that similar modifications in chemical constitution induce similar modifications in the action of their derivatives. Thus, they have shown that by introducing methyl into the molecule of strychnine, brucine, and thebaine, the convulsive action exerted by these substances on the spinal cord was changed into a paralyzing one exerted on the ends of the motor nerves. Besides these, other alkaloids which ordinarily do not exhibit a convulsive action, exhibit a paralyzing one when their constitution is modified by the introduction of methyl into their normal constituent molecules; thus, methyl-morphine, methyl-nicotine, methyl-atropine, methyl-quinine, and methyl-veratrine, and several others, all exhibit this paralyzing action. A number of experiments made with regard to this point by Drs. Lauder Brunton and Cash seem to show that, as a general rule, most of the compound radicles formed by the union of amidogen with the radicles of the marsh-gas series possess a paralyzing action on motor nerves.

The subject of the relation between chemical constitution and physiological action is at present one of the most important problems to be solved in pharmacology. Already many of the most important alkaloids, derived ordinarily from the vegetable kingdom, have been produced artificially in the laboratory, and their chemical constitution has been studied with results more or less satisfactory in the different cases. Thus, for instance, caffeine has been found to be a tri-methylxanthin. Hydroxyl, methoxyl, and ethoxyl have been introduced, and characteristic changes in the action of the resulting compounds have resulted. Filehne, in experimenting with hydroxy-caffeine, found that it required nearly twenty-five times the dose to produce the rigidity of the muscular system of the frog that it did when unmodified caffeine was used, and that the dihydroxy-caffeine produced no effect whatever on the muscular system. The physiological action of ethoxy-caffeine seems no less remarkable, for, instead of producing rigidity and tetanic spasms, it seems to have the directly opposite effect, namely, that of producing diminished reflex ex-



citability, and in the higher animals, rabbits, and man, sleep and intellectual torpor are produced.

These modified caffieines have already been made use of in pharmaco-therapy, and a number of cases already stand recorded in which painful neuralgias of various parts of the body have been successfully treated by means of them.

The chemical study of drugs and their artificial production in the laboratory have, however, another important advantage, more especially for the physiologist. The explanation of the normal action of a highly complex alkaloid upon a still more highly complex and complicated organism, has at all times been the greatest difficulty in the way of the pharmaco-physiologist. Most of our difficulties to explain aright the manner of action of substances on the animal organism, are directly traceable to this double complexity. And yet there is, perhaps, no question that I have been asked more often in connection with my own investigations, and by men of very high standing in the medical profession, than the one, Why do you isolate your organs, and why do you want to split up your alkaloids?

It is not too much to say that, among the many drugs which we possess and administer in large quantity every day to a host of suffering invalids, there are, even in this enlightened age, scarcely half a dozen the physiological action of which is at all well understood, and perhaps not one on the nature of the action of which there is no doubt whatever left. This is evidently due to nothing else than the very complex constitution of the remedies employed, and the many possibilities of their acting on this or that class of tissues with greater or less affinity than on others. Hence, the great tendency of the present day; and, in fact, the only way left open to us as investigators of this line of research out of the difficulty is, first, the simplifying, as far as that can be done, of this great living machine into its constituent organs and tissues—in other words, the successful isolation of these organs from the rest of the body and the keeping them alive for a certain length of time, and, on the other hand, the simplification of the drugs and substances the action of which is to be ascertained.

It is for these very potent reasons that the successful isolation of any organ of the body without impairing, at least for a time, its normal functional activity, must be looked upon as a most important and fortunate step in the direction toward the solution of a multitude of physiological as well as pharmacological problems which could otherwise never have been even approached. And so, also, the simplification of those substances which we must recognize as highly complex into their constituent residues or molecules, must be looked upon as of parallel importance.

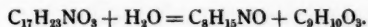
For the purpose of rendering this question a little clearer, we will take the case of atropine. From the large number of experiments made with this drug we have now abundant proof of the multiplicity of tissues that are influenced by it and also of the complexity of its action on any one organ or tissue. Confining ourselves to the action of atropine on the nerve terminations in certain viscera, we have, furthermore, very good proof that it affects two kinds of nerve structures simultaneously and similarly. The organs, like the heart, the pupil, and the intestines, which have been shown

by Gaskell to be supplied by two classes of efferent nerves namely, motor and inhibitory, we have evidence of atropine stimulating and finally paralyzing both these structures.

This fact, however, could only be rendered capable of solution by a study of the action of atropine on isolated organs. The question now arises, Can we still further prove by much more accurate experiments than have been made hitherto, that atropine really affects both motor and inhibitory nerve-fibres?

We will see!

Some years ago Kraut and Lossen succeeded in splitting up the alkaloid atropine into tropine and tropic acid. Lossen more especially succeeded in showing that the decomposition mentioned went on according to the following equation:



Ladenburg, in 1881, finally succeeded in producing atropine by synthesis from tropine and tropic acid by first neutralizing a solution of tropic acid with tropine, thus producing tropine trobate, and then boiling this compound with a small quantity of hydrochloric acid. The result of this procedure was a substance absolutely identical with atropine obtained in the natural way in all its chemical as well as physiological properties. The chemical identity was established by Ladenburg himself, the necessary physiological experiments were made principally by Profs. Hensen and Falck, who found, among other results, that the artificial drug antagonized muscarine stand-still of the heart, dilated the pupil, etc., in every way as the natural substance did.

According to the same method, Ladenburg undertook to manufacture certain other so-called semi-artificial atropines, called by him tropeines, in which the tropic acid molecule was replaced by a molecule of some other suitable acid.

Without going into a detailed account of the chemical and physiological properties of all these tropeines, it suffices for my purpose simply to call your attention to the important fact that with the substitution of tropic acid by other acids, went hand in hand a change in the physiological effects of the resulting compounds. Experimenting principally on the pupil, Hensen, Falck, and Volkers found that in most, if not all, tropeines dilatation was either not at all produced or very slightly so in comparison with atropine.

It was, therefore, not unreasonable to suppose that there exists a certain relation between this molecule and its physiological effect of dilating the pupil. According to Gaskell, moreover, the dilatation of the pupil is the result of stimulation of certain dilator fibres belonging to the class of inhibitory nerve-fibres, the innervation of the pupil being, in fact, similar to the innervation of the heart, the viscera, etc., and the question at once arose, Is the dilatation of the pupil by atropine due to the action upon these dilator fibres of the tropic acid molecule contained in atropine? and if so, Does this molecule similarly affect other nerve-structures, the histological structure and physiological function of which are identical with those of the dilator fibres of the pupil?

To investigate this point was the object I had in some experiments made in this laboratory during the last month.

The pupil did not seem to me a satisfactory organ of

the experimental investigation of this problem, and I, therefore, concluded to try the bloodvessels.

Through the kindness of Prof. Remsen, I was able to interest Mr. Lengfeld in the work, and he kindly consented to split up some atropine for me, into tropin and tropic acid. In the experiments on the bloodvessels, tropin was used in the form of the hydrochlorate; and the tropic acid as sodium tropate. Suffice it to say here, that it was found that sodium tropate caused vaso-dilatation, while tropine hydrochlorate gave rise to vaso-constriction. We have here, then, another very good example illustrative of the manner in which pharmacological problems must be solved, and, also, of the close relation which must always exist and be kept in mind, between chemical constitution and physiological action.

## ORIGINAL ARTICLES.

### FORMS OF TYPHOID FEVER SIMULATING REMITTENT MALARIAL FEVER.<sup>1</sup>

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THE diagnosis of typhoid fever is often attended with especial difficulty in malarious localities, where it may closely simulate remittent malarial fever. Nearly all physicians practising where malaria prevails, are in the habit of treating cases that differ in important particulars from each of these affections, and yet present certain combined features of both. These cases are usually observed during the late summer and early autumn months, when both typhoid and remittent fevers most prevail. The concurrence of these two fevers had long ago been observed, but since the coining of the term "typho-malarial fever" by the late Dr. J. J. Woodward, in 1863,<sup>2</sup> our medical literature has been rather unduly burdened with its consideration.

It is hardly worth while to-day to discuss "typho-malarial fever" as an integral affection; even Dr. Woodward seems to have been misunderstood in his original definition of its nature, for at the International Medical Congress of 1876 he declared the term to be "conveniently applied to the compound forms of fever which result from the combined influence of the causes of the malarious fevers and of typhoid fever."<sup>3</sup> It must be conceded that this combination of the two specific poisons is frequently observed, but at the same time there can be no doubt that the widespread adoption of Dr. Woodward's terminology has not been advantageous, either to the study of the diseases involved or to their therapeutics: for upon the one hand there is encouraged an indolent consideration of their complex symptoms, and upon the other a tendency to treat the malarial at the expense of the typhoid elements of the disorder, usually to the decided disadvantage of the patient.

It is not my object in this paper to consider that aspect of the question in which the characteristic symptoms of typhoid fever exist in combination with equally characteristic symptoms of remittent malarial

fever. It is at once granted that malaria may influence typhoid fever, just as it may modify pneumonia, dysentery, and other acute affections. Nor is it my purpose to refer more than briefly to those conditions occurring in malarious regions, where at the outset symptoms of remittent fever predominate, and not until later give place to the characteristic symptoms of typhoid fever, and but too frequently lead to the disingenuous diagnosis that a remittent has become transmuted to a typhoid fever.

Nor shall I engage in the discussion of that view of the subject that finds its most distinguished exponent in Loomis, and that denies to typhoid fever any part in the morbid processes that have received wide recognition as "typho-malarial fever," and ascribes them to a combination of a malarial and a septic element, under the title of "continued malarial fever," further than to claim that the history, course, symptomatology, and pathology of the affection so closely resemble those of typhoid fever that it is impossible to indicate any feature differing from those of the latter affection to an extent greater than can be accounted for by a complicating malarial element; and, furthermore, that the term "sepsis," in this connection, has not sufficient definiteness. Within limits it may satisfactorily account for anomalous cases in given localities, but it is impossible that such a septic influence should be so widespread as to produce the conditions under consideration, and yet fail to make itself manifest in other than malarial patients.

Finally, I shall not discuss the theory that "typho-malarial fever" is essentially malarial, a theory that has recently received support in Great Britain, and according to which it is a form of malarial fever in which intestinal and adynamic symptoms predominate.<sup>1</sup>

Tempting as these subjects are, they are considered from such different standpoints, and represent such differences of opinion, that one can at present hardly hope to reconcile them. One point, at least, is apparent: "typho-malarial fever," hybrid as it is, is far from including any definite pathological series, but is made to serve as the limbo into which writers crowd many groups of atypical cases. The object of the present paper is to direct more especial attention to a class of cases of continued fever in which the absence of nearly all characteristic symptoms except the fever has influenced medical men in malarious districts, at least, in assigning them to remittent malarial fever, and not to typhoid fever, to which disorder they properly belong.

Such cases are commonly encountered during the late summer and early autumn, though no season is without them. Beginning abruptly with slight chill, or insidiously, they run the course of remittent fever of mild type, either with slight variation of temperature, or of greater intensity with well-marked remissions, never passing into a typhoid condition, never developing the characteristic symptoms of typhoid fever, yet absolutely uninfluenced in their duration by anti-periodic treatment, running a course of three, four, or even five weeks, and terminating almost invariably by slow lysis and recovery.

<sup>1</sup> Read at the meeting of the Association of American Physicians, Washington, June 3, 1887.

<sup>2</sup> Outlines of the Chief Camp Diseases of the U. S. Armies, 1863.

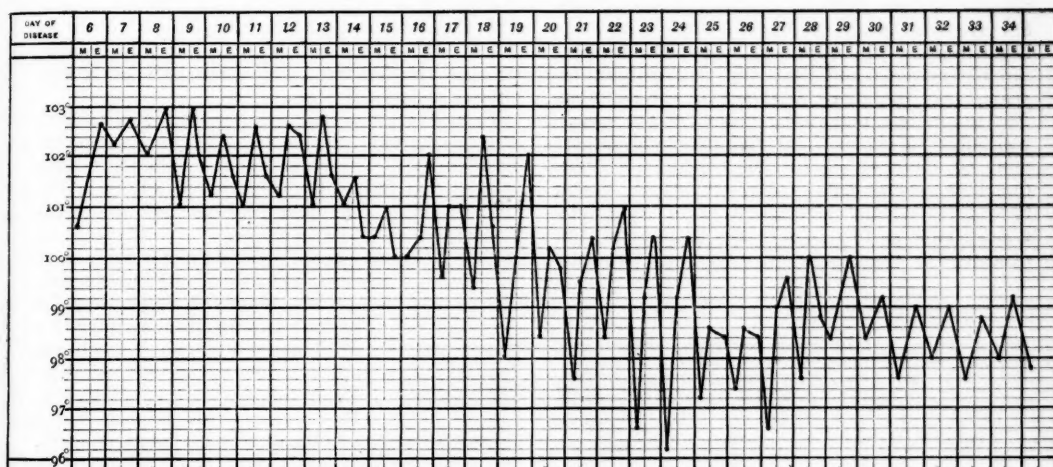
<sup>3</sup> Trans. Internat. Med. Congress, Philadelphia, 1876, p. 340.

<sup>1</sup> Squire: *Lancet*, 1887, I., 73. Jagoe: *Ibid.*, 1887, I., 119.

These cases are at first almost always regarded as of remittent malarial fever. From beginning to end they may develop no symptom that could not belong to this disorder, except the persistence of fever under strongly anti-malarial treatment, and the occasional concurrence of circumstances that point to a typhoid origin. There is no intellectual cloudiness or hebetude of expression. Sleep is but slightly disturbed. The tongue remains moist and coated with a thin whitish or yellowish fur; the appetite persists very often in some degree. There is almost never epistaxis. Constipation is commonly observed, diarrhoea very rarely. There are no bloody stools, no tympanites, no iliac tenderness or gurgling. Rose-spots are much more often absent than present. The patient can be restrained in bed with difficulty or under protest. Slight enlargement of the spleen

was then 100.6° F. At 9 P.M. it was 102.6° F. She was nauseated, and vomited several times. During the day she had several loose stools, and suffered intensely from headache. She was much debilitated. Some pain was referred to the epigastrium, but there was no belly-tenderness to pressure. The tongue was coated with thin white fur. The countenance was distressed. As soon as the nausea was overcome by appropriate measures, a milk diet was instituted, and fifteen grains of quinine sulphate in pills were given in three doses daily. Diarrhoea was controlled at once, and was not again present during her illness. The pulse, temperature, and, for a time, the respiration, were systematically observed, three temperature observations being taken daily (at 7 A.M., and at 3 and 9 P.M.) as shown in Chart I. Cinchonism was quickly induced, and maintained for several

CHART I.



may occasionally be detected, but is more frequently not observed. More severe cases, beginning more or less abruptly, develop primarily the symptoms of remittent fever, and diagnostic doubts only arise when the absolute resistance to anti-periodic treatment and the gradual appearance of typhoid symptoms excite suspicions of the incorrectness of the original diagnosis. These latter are the cases that, now correctly, again incorrectly, suggesting the combined influence of two specific morbid poisons, are dubbed, by most practitioners in malarious districts, "typho-malarial fever."

From my note-books I have selected the following cases as fairly representing the mild forms of typhoid fever to which my paper has reference.

CASE I.—A girl, nine years old, residing for the summer in Baltimore County, among the hills overlooking Lake Roland, one of the water storage lakes of the city, was taken sick July 22, 1884. The attack began with languor and headache, anorexia, and nausea. She had no chill, but remained languid and thoroughly uncomfortable. She was not confined to her bed until the 27th, when it became evident to her mother that she was unfit to be about. I saw her at midday of the 28th. Her temperature

was then 100.6° F. At 9 P.M. it was 102.6° F. She was nauseated, and vomited several times. During the day she had several loose stools, and suffered intensely from headache. She was much debilitated. Some pain was referred to the epigastrium, but there was no belly-tenderness to pressure. The tongue was coated with thin white fur. The countenance was distressed. As soon as the nausea was overcome by appropriate measures, a milk diet was instituted, and fifteen grains of quinine sulphate in pills were given in three doses daily. Diarrhoea was controlled at once, and was not again present during her illness. The pulse, temperature, and, for a time, the respiration, were systematically observed, three temperature observations being taken daily (at 7 A.M., and at 3 and 9 P.M.) as shown in Chart I. Cinchonism was quickly induced, and maintained for several

days, when the powerlessness of quinine to control the fever was demonstrated, and the dose was diminished to six grains daily. This was continued until convalescence was established, and was the only medication employed. Pain and aching of the limbs was relieved by gentle friction and sponging. There was slight delirium for one or two nights during the first week, but afterward the fever remained the only prominent symptom. Splenic enlargement could not be determined. The abdominal and thoracic organs gave no sign of disorder. Rose-spots, iliac tenderness, tympanites, diarrhoea (except as noted) never developed, though assiduously looked for. The tongue remained furred, but was never dry or brown, or tremulous. There was no epistaxis. The skin remained rather dry. A slight degree of hebetude was noticeable, and did not disappear entirely until convalescence was established. The diagnosis of typhoid fever was made from the symptoms. By the nineteenth day of the disease the morning temperature was normal, but that of the evening continued elevated, gradually becoming lower until convalescence was established on the thirty-first day.

Excepting the diarrhoea of the first week, and the



slight hebetude throughout, the continued fever was the only prominent symptom. A most instructive feature of the case was the morning apyrexia, dating from the nineteenth day. This temperature variation at once suggests what writers have described as the transition of a remittent fever to an intermittent. With the hope of preventing this evening exacerbation, quinine was again pushed to pronounced cinchonism, but in vain. Morning apyrexia, however, is a common phenomenon of the latter period of typhoid fever, and a disregard of this fact is answerable for many of the so-called relapses of this disease, especially in private practice, where the medical attendant unwisely judges of the condition of his patient from a single morning daily visit.

CASE II.—On August 6th the six-year old sister and room-mate of my first patient was observed to have fever. She had been somewhat listless for two days previously, and had been warm, and without appetite. The evening temperature on August 8th was 102° Fahr. Systematic observations were begun on the 9th. Chart II. shows the temperature observations, and bears out the remittent-like character of the attack as shown by the symptoms. Not to prolong unduly the history of this case, it will suffice to say that, although the fever was pronounced, there was at no time hebetude, delirium, diarrhoea, abdominal or iliac tenderness, roseola, tympanites, splenic enlargement, bronchitis or epistaxis, symptoms that to a greater or less extent are expected in typhoid fever. The skin was dry,

monstrated, the daily dose was reduced to six grains, and was continued until defervescence, which occurred on the seventeenth day. Upon the establishment of convalescence both children were considerably wasted.

No other member of the household was attacked. The sanitary condition of the house gave no explanation of the origin of the attacks. The drinking water was pumped from a spring remote from any contaminating influence. The ice-house, however, had been filled from a pond used as a power for pumping the spring water to the house; and this pond received not only the overflow-water of the cesspool of the house, but of that of one or two others on the neighboring hillsides. Upon discovering the source of the ice supply, its use was at once discontinued. During the previous season one or two cases of "slow fever" had occurred in the vicinity.

It would be difficult to regard my second case as other than one of remittent fever, were it not for its defiance of anti-malarial treatment and the concurrence of the first case, which was sufficiently distinctive of typhoid fever.

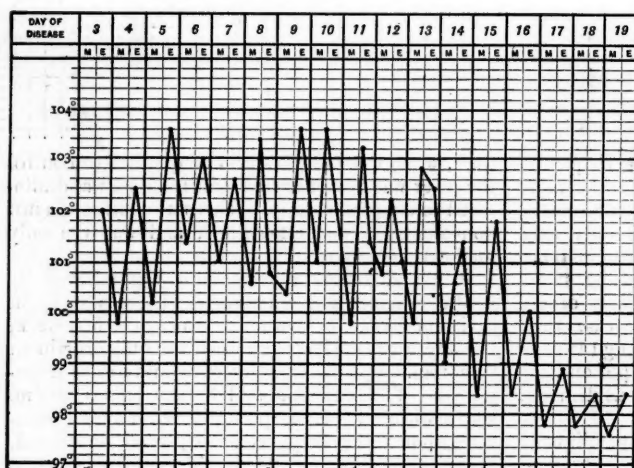
Typhoid fever in children, however, is more often atypical than not, the most characteristic symptoms often failing. The resemblance to remittent fever is almost as frequently observed in adults, in the milder forms. The following case affords an example:

CASE III.—G., about twenty-three years old, a clerk, unmarried, tall and slender, leading an active life, spending the summer months in the country in a small house, near which there was an open ditch which retained water for several days after rain storms. In previous years he had had a number of attacks of malarial fever, which is occasionally observed in the neighborhood. On August 28th, after having felt unusually well for some time, he had a chill. Continuing to feel badly, he called to see me at my office on the succeeding day. He had headache, pain in the back, and general discomfort, but retained some appetite; his face was flushed, and his tongue coated; his bowels had been moved the day previous; there was no abdominal tenderness; his temperature at 3 o'clock P.M. was 102.6° Fahr. He was told to go to bed, which he did at the house

of a relative in town, and took until ten o'clock the following morning forty-two grains of sulphate of quinine. Cinchonism was not very pronounced, however; a milk diet was instituted; the daily dose of quinine was fixed at twenty-four grains. The course of the disorder is shown in Chart III.

September 1. The bowels not having been moved since the 27th, two seidlitz powders were given, one in two hours after the other; a slight action was had toward morning; the tongue was coated with a thin,

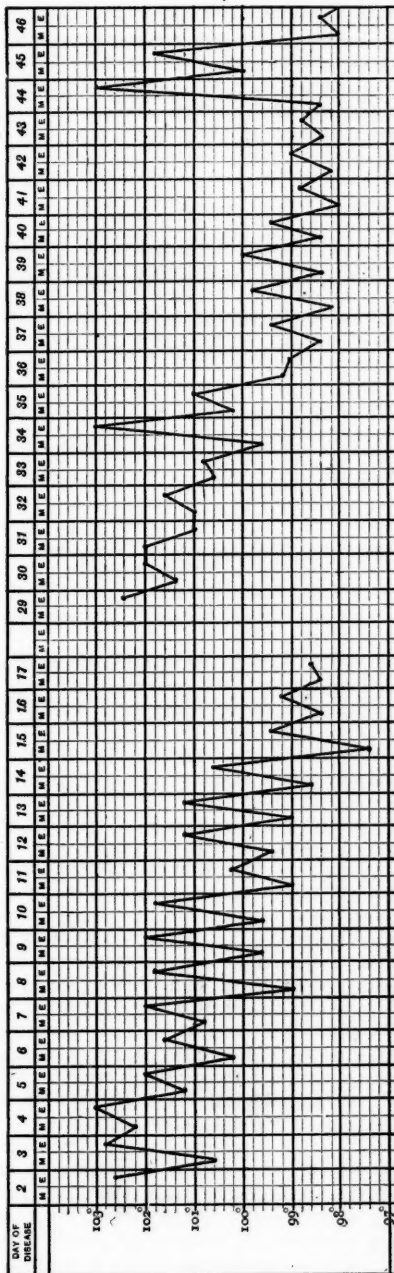
CHART II.



the conjunctivæ somewhat injected, the tongue moist and slightly coated. The child was thirsty, and was always eager to drink its apportioned share of milk at the stated intervals. She slept well at night, and during the day was bright and playful, indeed, disposed to romp. Sulphate of quinine was given in daily doses of twelve grains, divided into three doses, until intense cinchonism was induced. This effect was kept up until the fifth day, when its powerlessness to control the fever having been de-

whitish fur; during the night he vomited, and had slight epistaxis; there was some pain in the back;

CHART III.



there were no rose-spots; no abdominal tenderness; the expression was bright and the mind active; there was no headache; the patient read in bed, and betrayed interest in his case and in current topics.

2d. Bowels moved twice during the night (from aperient). From this date the course was quite uniform. The tongue remained slightly coated, but moist; constipation was obstinate, and only relieved by saline purgatives; no roseola; no iliac tenderness nor gurgling were observed; the urine contained no albumen; hebetude or nervous symptoms did not develop; he slept well, and during the day was comfortable, reading diligently; his appetite was good, but only milk and beef-tea were allowed; there was, perhaps, some enlargement of the splenic area of dulness.

Complete defervescence took place on September 13th, or the seventeenth day of the fever. Convalescence seemed established. Without permission he spent the 21st at a relative's, but felt cold and miserable. On the 22d, of his own accord, he took ten grains of blue mass and two seidlitz powders, and the following morning a dose of Hunyadi water. This was followed by violent nausea and vomiting, but by a single stool. His temperature was now 103° F. He was ordered to take twenty-four grains of quinine daily. This was continued until October 2d, when the daily dose was reduced to twelve grains. On September 26th, his bowels not having been moved for several days, he took solution of the citrate of magnesia, two liquid stools resulting. Tongue coated with thin white fur. Belly not at all tense, but two roseola-like spots were detected. There was no belly-tenderness. The temperature slowly declined, and became normal on October 7th. With a slight interval of vesical tenesmus with a sudden rise of temperature, recovery was uninterrupted though tardy.

Ten days previous to G.'s illness, his younger brother, who had been living with him, had fallen sick, and had been attended in the country by Dr. R. W. Erickson, of Elkridge Landing, Howard County. He had a typical and severe attack of typhoid fever, and had a protracted convalescence. It proved impossible to ascertain the source of infection of these young men.

My note-books contain a number of similar cases, and my clinical experience has included a large number; indeed, not a year passes that they are not brought to my notice, both in my own practice and in that of medical acquaintances.

There are few diseases that are more distinctly marked by characteristic features than typhoid fever, and although one or more signs are absent in many cases of moderate severity, enough may be identified to make an easily recognizable picture. So inconstant are the separate typical symptoms, however, that Liebermeister has confessed that in typhoid fever we have not a single pathognomonic sign. While this inconstancy is generally recognized, there is not a general realization of the mildness with which the disorder very frequently pursues its course. "Walking typhoid," the *typhus ambulatorius* of the Germans, though usually considered a rare form, is in fact a very common one. The cases which declare themselves by the sudden development of alarming or fatal symptoms probably form but a small proportion of the whole number.

We have had to modify many of our views con-

cerning this disease. Though no less an authority than Wunderlich<sup>1</sup> declared that a disease in a child or adult under middle age, in which, between the fourth and sixth days, the evening temperature does not reach 39.5° C. (103.1° F.), is not typhoid, we now know that he is far from speaking correctly, even for severe forms of the disease. Strabe noted fourteen cases during the whole course of which a normal, at times a subnormal, temperature was observed. In these cases the accompanying symptoms established the diagnosis beyond a doubt.<sup>2</sup> Fräntzel,<sup>3</sup> in more than one hundred cases of severe typhoid fever, treated in the field-hospital during the late Franco-Prussian war, observed forty-one cases in whom the temperature did not reach 39° C. (102.2° F.). In three of these it never attained 37.3° C. (99.14° F.). These were all severe cases. Strabe's mortality was 14.1 per cent., that of Fräntzel 39 per cent. for the forty-one cases.

In mild forms of the fever the frequent occurrence of but slightly elevated temperature is not at all uncommon, and is widely admitted. Liebermeister noted, at Basle, affections which ran their courses without fever, and yet could, with good reason, be referred to typhoid infection. Loomis, in linking the "mild type" of cases of typhoid fever with the "walking type," states that the eruption appears in them early, and is scanty and brief, and that diarrhoea is present in most cases. This description undoubtedly suits many of our cases in Baltimore as elsewhere, but there is a large class, certainly typhoid in character, in which constipation is the rule, and rose-spots are decidedly exceptional. Indeed, these two symptoms are much less constant in well-defined though mild typhoid fever than many of our writers would lead us to conclude. Liebermeister, in one hundred patients in whom the fever never exceeded 104° F., and in many 102.5° F., and in whom the course was markedly shortened, observed roseola in but twenty-one, diarrhoea in forty-one, while splenic enlargement was observed in seventy-one.<sup>4</sup> He has also reported from his hospital service many cases entered as febrile and afebrile abdominal catarrh, which he attributes to typhoid infection. A number of writers have made similar observations.

In two admirable papers, one entitled "On the Diagnosis of Mild Cases of Typhoid Fever," etc.,<sup>5</sup> the other "On the Mild Forms of Continued Fever," etc.,<sup>6</sup> Dr. W. W. Johnston, of Washington, has described these forms of typhoid fever with so much faithfulness and skill that I should hesitate to present my own views upon what may by many be considered as already demonstrated, were it not that many observers, in malarial districts especially, persist in regarding them examples of "typho-malarial" and "remittent malarial fever." Malaria often complicates typhoid fever, but it oftener hap-

pens that its presence is assumed unjustifiably. The mental bias is often so strongly pronounced in favor of malaria, that even the strongest evidence fails to prevail against it.

Remittent malarial fever is so simulated by the cases under discussion that the diagnosis must wait upon the crucial test of treatment. It is true, that all writers admit that occasionally antiperiodic remedies, generally efficient, fail to control the malarial paroxysm. This occurs especially in many cases of pernicious fever, and in certain adynamic remittents where profound systemic disturbance is apparent; but in the milder forms of remittent fever that correspond to the milder form of typhoid fever, the behavior of the individual under quinine practically settles the question. If the full influence of the anti-periodic has been exerted for four or five days, or a week, without the desired result, the diagnosis of typhoid fever becomes justifiable, and the prognosis may be made with a high degree of confidence.

Not often earlier than the end of the second or later than the fourth or fifth week the fever will terminate by gradual lysis, rarely by crisis. This will be the almost constant result. I have never seen a patient die in whom the disease took the course indicated, and who was submitted to proper control. There are exceptions to the rule, however. Dr. Johnston has given a most interesting history of a case of very mild typhoid fever, of the atypical character to which I refer, suddenly developing fatal complications.

The occasional occurrence of death in cases of "walking typhoid" also shows that even the mildest cases are not without danger. These cases, however, have the disadvantage that they often elude observation and incur too often the dangers of complications from a persistence of those influences that tend to precipitate them. Yet, unquestionably, very many of the cases of "walking typhoid" never develop alarming symptoms, and are never recognized, the patient probably never interrupting his daily work. Doubtless many, in mild degree, display, upon examination, the more characteristic signs of typhoid fever, diarrhoea, rose-spots, enlarged spleen, etc., but it is quite certain that in not a small number these signs fail to be discovered. They are also absent in a large proportion of those cases of typhoid fever which have been the subject of this paper, and, in consequence of their absence, the true nature of the disease is often unrecognized, and the pathological responsibility thrown upon "febricula," "simple continued fever," "gastric fever," "bilious remittent fever," "remittent malarial fever," etc. From beginning to end they lack the most characteristic symptoms of typhoid fever, and should be diagnosed from the persistence of fever, its defiance of specific treatment, and the occasional demonstration of their dependence upon the typhoid principle.

For the future it is quite safe to predict that a solution of diagnostic difficulties will be attained often through the rapidly increasing knowledge derived from bacteriological research and culture observations.

<sup>1</sup> Medical Thermometry. The Sydenham Soc. Trans., 1871, p. 293.

<sup>2</sup> Berlin. klin. Wochenschr., 1871, No. 30.

<sup>3</sup> Zeitschr. f. klin. Med., 1881, p. 226.

<sup>4</sup> Ziemssen's Cyclop., vol. i. p. 120.

<sup>5</sup> Amer. Journ. Med. Sci., Oct. 1875.

<sup>6</sup> Ibid., Oct. 1882.



FLOATING SPLEEN: SPLENECTOMY;  
RECOVERY.<sup>1</sup>

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So scant and unsatisfactory is the literature bearing upon splenectomy that we trust the following detailed history may not be devoid of interest.

Mrs. C. A. G., aged twenty-nine, born in America, housewife, was admitted to the hospital May 6, 1886. She stated that she had suffered during the past six years from an abdominal tumor, associated at irregular intervals, with severe hemorrhages.

Her family history was good, there being no hereditary dyscrasia; her parents aged about seventy-one years; brothers and sisters are all living, except one sister, who died of some "obscure nervous affection."

Previous to the present trouble, the patient enjoyed perfect health; though living in a malarious district, she never had ague; has menstruated since thirteen years of age, and was always regular till one year ago when, after an attack of hematemesis, her "periods ceased for a few months," nor had she menstruated since March, 1886, the time of the last hemorrhage. She has been married seven years; has no children, but had three abortions in 1880, '82, and '85, at the fifth, eighth, and second month respectively.

Each of the mishaps was apparently causeless, and without warning, except the last, which may have been induced by large doses of ergot administered for the relief of hemorrhage. But, be this as it may, after the first abortion she suffered more or less constantly with vertigo and general nervousness; the tumor, though probably having existed for a long time, was not noticed until the morning following the second miscarriage, in 1882, and the first attack of vomiting of blood occurred two months previously, and was followed after the lapse of ten days by another; a third occurred about six months later, a fourth in July, 1883; a fifth in September, 1884; a sixth in July, 1885; a seventh in December, 1885, and an eighth in March, 1886.

The blood was always vomited except in one instance, when part passed by the mouth, and part per rectum; on another occasion the greater portion escaped by the latter course. The attacks were marked by suddenness of onset, and most alarming severity, the only premonitory symptom being a day or two of drowsiness and general malaise; then, the patient usually waking from sleep, more quiet and profound than had been her custom in health, would complain of salty taste and intense nausea. Scarcely would she experience these sensations, until the blood came gushing from mouth and nostrils, never ceasing till syncope, nature's hemostatic, would check the flow, and leave the victim all but exhausted.

The period following such an ordeal was generally

characterized by good health; appetite, lost weight and strength were soon regained, but only preparatory to another siege. The intervals became shorter, and each hemorrhage more severe than the preceding, until with the last, the unfortunate woman lay pulseless, and apparently dying.

She then entered the hospital—a perfect picture of anæmia; her skin was pale and waxy; lips and conjunctivæ almost colorless, body emaciated; hands and feet cold; respiration shallow; temperature subnormal; pulse rapid, feeble, and compressible. She was restless, and complained of alternate flushes of heat and shivering sensations, of drowsiness, vertigo, tinnitus aurium, and dimness of vision. Physical examination of the abdomen revealed a tumor occupying the left iliac, and extending to the suprapubic region. Its surface was flat and smooth, contour well-defined, of oblong or roundish shape; dimensions four by five inches; consistency more than semi-solid; percussion note dull, and the auscultatory signs were negative. It was extremely mobile, though preferring the left iliac region, the mass could be shifted, either by change in the position of the patient's body, or by the surgeon's hand, into any part of the abdominal cavity, even above the umbilicus.

The patient stated that, for a short time after its appearance, the swelling increased rapidly in size, but that within a year or more its condition had been in this respect stationary, except just before a hemorrhage, when it would become considerably enlarged; that it would pulsate violently during an attack, at the same time diminishing in size, but during the interval its former dimensions were soon regained, there being then absolutely no evidence of pulsation. Another conspicuous feature of the case was the absence of pain throughout the history of her illness, with the exception of such discomfort as might be referred to chronic constipation and occasional attacks of vesical tenesmus.

Vaginal examination showed that the tumor extended deeply into the cavity of the pelvis, occupying especially its left half, from which position it could be readily dislodged by the index finger, after the manner of ballottement. The uterus was of normal size, but slightly displaced to the right side. The sound, as well as conjoined manipulation, proved that either the uterus or the tumor was movable, the one without the other. There was no evidence of kidney, liver, or other glandular disease; the lungs and the heart were also normal, though in case of the latter, a well-marked hæmic murmur could be heard at the base. Percussion over the splenic area, from the ninth to the eleventh rib under the axilla, elicited abnormal resonance.

After careful consultation, surgical interference was deemed the only means of relieving the patient of further suffering; but such was the state of debility that this step would not have been justifiable without previous improvement in her general health. She was, therefore, placed upon tonic doses of quinia, with tinct. ferri chloridi, and acidum phosphoricum dilutum, and after three weeks had gained sufficient strength to warrant the removal of the tumor. Accordingly, a brisk cathartic was ordered

<sup>1</sup> Read at the meeting of the American Surgical Association, Washington, D. C., 1887.

on the night preceding the operation, and on May 27, 1886, the bowels being further relieved by a copious enema of soap and water—the patient having fasted, received the anæsthetic (pure ether), and laparotomy was performed by an incision five inches long, and in the median line, its upper extremity terminating one inch below the umbilicus. The lips of the wound were then held aside by means of retractors, and the upper part of the tumor brought plainly into view; the lower half dipped deeply into the pelvic cavity, and was concealed by a broad and vascular fold of omentum; on lifting the mass (now recognized to be the spleen), another portion of omentum, traversed by more than a dozen very large and tortuous veins, was found to have become firmly and extensively adherent to its posterior and external surface.

Though manipulated with the most delicate care, these adhesions gave way, necessitating the application of clamp forceps to arrest hemorrhage. The capsule of the spleen also yielded, tearing rather widely at a point close to the hilum; a very profuse gush of blood followed, but was promptly controlled by an assistant who made pressure by grasping the ruptured portion in his hand.

The pedicle, consisting of the splenic vessels, etc., was then transfixed and secured by a double carbolized silk ligature, another ligature being applied as an additional safeguard against secondary hemorrhage. After the vessels of the omentum had been treated likewise, all the ligatures being cut short and dropped into the cavity of the abdomen, the latter was thoroughly cleansed, and the splenectomy completed (1.15 P.M.) by closing the wound with deep, interrupted silver sutures, including the peritoneum.

The operation was done under Listerian precautions, under the carbolic spray; the line of incision dressed with dry iodoform, protected with antiseptic gauze, secured by adhesive plaster, and all covered by a heavy layer of absorbent cotton, held in place by an abdominal (flannel) bandage. Not more than two ounces of blood were lost, and yet the patient suffered the most profound shock, requiring, both during and after the operation, the free administration of whiskey and ether, hypodermatically, to stimulate and sustain her extremely feeble circulation, but she soon reacted, and at 6 P.M. had a pulse of 100, a temperature of 99.5°, and normal respiration. She stated that she felt comfortable, though weak and stupid.

For a short time she appeared to lose flesh, and to become more anæmic; there was slight increase in the number of white blood corpuscles, but no perceptible enlargement of the liver, thyroid, or lymphatic glands as formerly observed in similar conditions by Zézas, Tauber, and others. Under the carefully directed after-treatment, which was principally dietetic—consisting of milk, beef-tea, rice, eggs, etc., at short but regular intervals—she soon began to improve. On the second day after the operation a large quantity of gas escaped from the stomach and intestines, and, on June 1st, her bowels moved freely. The wound was also examined: its edges had already firmly united, and there was no evidence of suppura-

tion. The stitches, eight in number, were then removed, and fresh dressings applied.

The case progressed favorably, her pulse ranging from 88 to 100, and her temperature never rising above 100.4° until the eleventh day, when catheterization became painful, the patient complaining also of slight tenderness on pressure in the left iliac region. This marked the onset of a somewhat alarming and rather obstinate attack of phlegmasia alba dolens. During the ensuing week the intensity of the symptoms increased, the tenderness and œdema spreading to the left loin, vulva, buttocks, and lower extremity, along the entire course of the left femoral and internal saphenous veins to the left foot. She suffered, also, from profuse watery diarrhoea and loss of sleep, there being at the same time marked increase in the febrile excitement. But this complication slowly yielded to anodyne, astringent and tonic plan of treatment, so that by June 18th her pulse and temperature were normal, and the patient was free from all distress. She was discharged from the hospital June 29, 1886—thirty-three days after the operation. Her health continued to improve; she menstruated in September and in October, 1886, but soon after that occurrence became *eniente*, and is now in the eighth month of her pregnancy.<sup>1</sup>

The symptoms and complications attending this woman's condition are now readily explained. The hemorrhages were probably due to certain pathological changes in the vessel-walls, induced by the damming back of blood from the misplaced spleen into the other abdominal viscera—bleeding occurring whenever the intravascular pressure would become sufficiently great to rupture the vessels. The intimate connection of the splenic circulation with that of the stomach and intestines, as well as the functional activity of the latter, are sufficient to explain the seat of the accident.

The abortions were caused by the irregular blood supply; the general hemorrhagic tendency, the malposition and reflex irritation of the pregnant womb.

The constipation, the displacement of the uterus and the vesical tenesmus were due, in great measure, to pressure exerted by the tumor. The spleen was "floating," probably, from some congenital defect in its attachment, there having been no history of effusion into the thoracic cavity, of corset-constriction, nor of other injury to the chest-wall.

The fact that phlebitis followed the operation may be accounted for by the hyperinotic state of the blood—a condition common to all such cases—and favoring coagulation at some convenient point in the course of the circulation. In this instance, the point of least resistance seems to have been the common iliac vein—the left rather than the right, because it is more tortuous and joins the vena cava at a more oblique angle than does its fellow of the opposite side. Again, the walls of this vessel, not only diseased, but also impaired by the combined pressure of the spleen and the rectum, were

<sup>1</sup> Since the above writing, the patient was confined at term, but the child was born dead.

further damaged by removal of the support afforded by the tumor.

The profuse diarrhoea must have resulted from the congestion of the intestine, which was increased by the removal of the spleen, together with that peculiar state of the vascular tunics and of the blood, which favors the escape of its serum.

As to the pathology of the splenic tumor, there was nothing especially interesting, except that this was not an instance of *supplementary* spleen, such as have been not infrequently observed post-mortem. It weighed, after the escape of a considerable quantity of blood, fourteen ounces; was of little more than normal density; its dimensions, five by five and a

## RECORDED CASES OF SPLENECTOMY.

The operation in all these cases was by incision of the abdomen in the median line.

No.	Operator.	Date.	Age.	Sex.	Disease.	Result.	Remarks.	Reference.
1	Franzolini,	July, 1881.	22	F.	Hypertrophy of spleen; leukæmia.	Recovered	Sickly since childhood; tumor recognized in 1880; weighed 61 ounces; measured 9½ by 10½ inches; convalescence delayed by pleuritis.	Wiener medicin. Wochenschrift, 1882.
2	Credé, Jr.	1882.	44	M.	Hypertrophy of spleen following injury: cystic degeneration.	Recovered	Attempted to remove cyst, but was compelled to remove entire organ.	11th Ger. Surgical Cong., Ctrbl. für Chir., 1882, No. 29.
3	Rydygier,	March, 1884.	30	F.	Splenic tumor; leukæmia.	Died.	Died 24 hours after the operation from hemorrhage from abdominal wound.	Lancet, 1884.
4	Billroth,	March, 1884.	...	F.	Sarcoma of spleen.	Recovered	.....	13th Congress Ger. Surgical Society.
5	Thornton,	April, 1884.	19	F.	Hypertrophy; commencing cystic degeneration: increasing and painful.	Recovered	Tumor had been recognized for two years.	Brit. Med. Journ., April, 1886.
6	Terriér,	June, 1884.	y'ng girl.		Hypertrophy; leucocythæmia.	Died.	Died 20 hours after the operation from capillary hemorrhage into peritoneal cavity; spleen weighed 13 pounds.	Med. Record, Aug. 9, 1884.
7	Giovani,	October, 1884.	43	F.	Chronic hypertrophy; pernicious anæmia.	Recovered	Reported doing well 72 hours after the operation.	
8	Köberlé,	1884.	...	F.	Hypertrophy, consecutive to intermittent fever.	Died.	Died 20 hours after operation, supposed from intracranial hemorrhage. Great loss of blood during operation. Spleen 16 inches in diameter; weighed 1 pound; liver enlarged; abundant serous exudation; œdema of extremities.	Journ. d'Accouchements, May, 1884.
9	Younker,	1884.	32	F.	Dislocation of spleen.	Recovered	Spleen three or four times larger than normal.	Amer. Med. Journ., July, 1884.
10	Roddick,	Nov. 1885.	...	M.	Rupture of spleen; wound of abdomen; laceration of kidney.	Died.	Died six hours after the operation.	Montreal Medico-Chirurg. Society.
11	Albert,	1885.	34	F.	Tumor in left hypochondrium; painful on standing or walking; great increase in white blood-corpuscles.	Recovered	Adhesion to tail of pancreas and omentum. Wound healed in four weeks. Great increase in red blood-corpuscles after operation.	Ctrbl. für Chir., 1885, No. 24.
12	Thornton,	April, 1886.	...	F.	Hypertrophy of spleen.	Died.	Death from internal hemorrhage.	Brit. Med. Journ., April, 1886.
13	Polk,	May 19, 1886.	...	F.	Dislocation of spleen.	Recovered	Spleen adherent to uterus and bladder. Patient now in excellent health.	Communicated by operator.
14	Ceci,	May 23, 1886.	17	F.	Hypertrophy (congenital) of spleen.	Recovered	Tumor very movable, floating from hypochondrium to front of abdomen. Violent delirium followed the operation for two days. Great prostration; pulse could not be counted; respiration 70 to 80.	Gazetta degli Ospitali.
15	McCann,	May 27, 1886.	29	F.	Wandering spleen; violent attacks of hæmatemesis; great anæmia.	Recovered	Extensively adherent to omentum. Convalescence complicated and retarded by phlegmasia alba dolens.	Medical News, Aug. 1887.
16	Meyers,	October, 1886.	...	F.	Suppurating spleen in peritoneal abscess; two sinuses leading; into abscess.	Recovered	.....	Journal of the American Medical Association, April, 1887.
17	Podrez,	.....	...	F.	Hypertrophy of spleen, with ascites and extreme cachexia.	Recovered	Recovered from effects of the operation, but died December 27, 1886, from diffuse parenchymatous nephritis.	Lancet, Feb. 1887.



half inches; border slightly rounded; was very vascular, friable on section, but paler than usual, its color and consistence resembling, on the whole, a greatly enlarged kidney. Microscopic examination detected nothing abnormal, save slight thickening of the trabecular and intercellular connective tissue.

The patient's blood contained more white corpuscles than normal, but not enough to constitute leucocythæmia.

With regard to the functional effects of removal of the spleen, we are disposed to confirm the opinion of Crédé, who observes (*Medical Record*, July 29, 1882): First, that the spleen can be extirpated without injury to health, except a temporary anæmia. Second, that its extirpation produces a marked temporary anæmia, with increase of white corpuscles, as well as decrease of red.

Tauber further states (*Journal American Med. Association*, July 12, 1884): First, that the spleen is one of the main reservoirs of the blood, whose influence on the circulation is seen—after its removal—in the congestion of the liver, kidneys, and especially lymphatic glands (not perceptible in the case now under consideration, though probably present). Second, that no physiological affinity exists between the thyroid and the spleen. Third, that the removal of the spleen does not impair the digestive functions or nutrition.

In addition to these facts, we observe that conception and parturition are possible after splenectomy; also, that the spleen, alone, is not the "cradle and the grave of the red blood-corpuscle."

At the present writing, more than a year after the operation, the woman's health is good, and she is able to perform without discomfort all the duties incumbent upon a farmer's wife, the only remaining trouble being slight swelling and weakness of the left lower extremity.

In conclusion, we append a review of the history of excision of the spleen, also certain interesting statistics compiled by Prof. James McCann.

Splenectomy, for all causes, has now been performed fifty-one times, with a mortality of 62.8 per cent. In addition to these complete excisions, the table given by Otis (*Med. and Surg. History of the War*, Part 2, vol. ii. pp. 152-153) shows partial excision to have been performed in twelve cases, for various injuries of the organ. All these cases recovered.

By reference to this table, and to that of Mr. Herbert Collier (*Lancet*, February 11, 1882), it will be seen that the operation of complete excision of the spleen for injury, as well as for dislocated or "wandering" spleen, and for hypertrophy uncomplicated with leukæmia, afforded a very gratifying degree of success—thirteen operations with eight recoveries. On the other hand, the same tables show a ghastly record for the cases in which the operation was performed for hypertrophy of the spleen associated with leukæmia—sixteen cases in all, without a single recovery.

The results obtained since Mr. Collier's publication show a steady and very gratifying improvement in the percentage of recoveries. The table appended to this paper includes all the cases operated upon

since 1881, so far as I have been able to find any record—seventeen complete excisions, with twelve recoveries. Included among the successful cases are two, those of Franzolini and Alesio Giovanni, in which the splenic disease was probably complicated by leukæmia. It is possible, however, that not all of the fatal cases have been reported. Thus, Tait refers (*Ovarian Diseases*, etc.) to two instances within his knowledge in which hypertrophied spleen was mistaken for ovarian tumor, and the operation for the removal of these supposed cysts terminated fatally in both cases, no report of the mistake ever being published. The chief source of danger in the operation consists in the marked tendency to hemorrhage—a tendency unfortunately present in all cases of splenic disease—and the mortality, in a large majority of the fatal cases, has been due either to uncontrollable bleeding during the operation—as in one of Bryant's cases, death having occurred in fifteen minutes from the loss of blood; or to secondary hemorrhage at the seat of ligature, or to capillary oozing from the highly congested abdominal viscera—as in Terrier's patient, where death followed from capillary hemorrhage into the peritoneal cavity, twenty hours after the operation.

In the discussion which followed the report of Crédé's case to the German Surgical Society (*Centralblatt f. Chir.*, 1882, No. 29) six other cases were mentioned by different operators, with but one recovery. However this may be, the success attending the recent excisions is so very encouraging that we may hope that even in cases of hypertrophy complicated by leukæmia, splenectomy will not always merit the condemnation which it receives at present, and not always be regarded as "physiologically unsound and surgically unsafe," as Mr. Bryant characterizes it, nor as the "useless and deadly experiment" which Mr. Collier considers it to be.

## COLOR BLINDNESS AMONG RAILROAD EMPLOYÉS.

BY WILLIAM THOMSON, M.D.,

PROFESSOR OF OPHTHALMOLOGY IN THE JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA.

THE conflict between the officers and the employés of the Reading Railroad, which has occupied recently the attention of the public, and has threatened to produce a suspension of work on that road, has reopened the question of color blindness among railroad employés, and led to a full demonstration of its existence among the employés engaged even as enginemen, where the defect might lead to serious accidents, with loss of property and life. The officers of the road have selected the system for examination suggested by the writer, and employed to a full success for more than five years past on the Pennsylvania Railroad, and have appointed me to supervise its details, and, as ophthalmological expert, to decide all doubtful cases after careful examination of those found defective by the non-professional examiners of the company.

The conflict is nearly over, since demonstrations of the optical defect in engineers, made before a committee appointed by the employés have satisfied them

of the propriety of the testing, and the safety of the travelling public demands the removal of all color-blind persons from positions where their optical defect might be the cause of distressing accidents. In the recent demonstration I was able at my office to show that an engineman declared a red danger signal, made by placing red glass in front of a large gas light at a distance of two feet away, to be a green light; he was also not only unable to distinguish a red from a green flag within six feet, but he failed to classify the flags, white, red, green, and blue, properly, even when allowed to take them in his own hands.

The system adopted by the Reading Railroad is the one in use on the Pennsylvania Railroad, and owes its value to the fact that large bodies of employes can be brought under inspection, and their defects discovered by non-professional examiners. It has been fully described in *THE MEDICAL NEWS* of January 14, 1882, in the second edition of Nettleship's work on *Diseases of the Eye*, and in a paper read before the American Association for Advancement of Science, in September, 1884, and in the *Popular Science Monthly* for February, 1885, and to those sources the reader is referred for further information.

Previous to its adoption by the officers and directors of the Pennsylvania Railroad two thousand men were examined, and their blanks submitted to me, and the color-blind men sent to my office for final action. Mr. Pugh, General Manager, stated in September, 1884, that there were thus detected four per cent. of men color blind, and ten per cent. of men deficient in acuteness of vision, and that, although it was very difficult to keep accurate notes of all examinations, he was satisfied that all dangerous persons had been removed up to that date, when over twelve thousand employes had been submitted to the system.

The statistics obtained upon the two thousand men were used as the standard by all the Division Superintendents, and however difficult it might be to report to the central office the full details of their examinations, they were always controlled by these known and accepted ratios. It has not been found requisite to send all men deficient to the ophthalmological expert, since they did not demand it, but submitted to the changes rendered necessary without opposition, hence I am unable to furnish exact reports of the examinations made at remote portions of the road. Most of the color-blind men have passed under my hands, as well as many cases of astigmatism, optical defects, and diseases or injuries reducing the sight below the standard, and the results may some time be found worthy of publication.

An opportunity to present the last opinions of the officers of the Pennsylvania Railroad has been afforded by a request which was made by the German Government, through its Minister, to the Surgeon-General of the United States Army for statistical and other information on the subject, and this letter, referred to me by the Surgeon General, has been answered by Mr. Pugh, who has kindly made efforts to obtain the figures from the great organization of which he is General Manager. He writes, under date of July 7, 1887, and says:

"I regret that so long a time has elapsed since the receipt of yours of May 25th and this reply. The delay has been occasioned by our efforts to obtain some statistical information, which I regret to find has not been kept up as closely as was intended. I enclose herewith statements showing the number of employes examined during the past five years, with the results stated.

"I can only add that we have attained the most satisfactory results from the system, and I think we can confidently claim that sense of security which follows the belief that we have no one employed in any position in which the use of signals is required, whose color-sense and sense of vision will not enable him to accurately determine all signals by which his action is governed."

Total number examined on lines east of Erie	25,158
Color blind . . . . .	481
Defective vision . . . . .	661
Hearing . . . . .	158

I am informed that the system has been found so satisfactory that it has been extended to the lines west of Pittsburg, and no doubt is now in use throughout all the lines controlled by the Pennsylvania Railroad.

It will be remembered that this system is also used to prevent the admission of defective men into the service, and that the apparently small percentage of color blind in this table may be ascribed to the non-application of men who know their deficiency, and to the fact that men in the service knowing their defect would leave the road before examination, and thus escape detection, and be enabled to gain employment on other roads, where no examinations are required. Perhaps twelve or thirteen thousand was the number who were subject to examination by virtue of being in positions where color signals were used to direct them, in 1884, and the difference between that number and the total 25,000, would be made up of new men who would present a small ratio of those below the standard, since men conscious of color blindness, or poor sight, would not apply.

The fact that the intelligent officers of the Pennsylvania Railroad have adopted this system, purged their old force of all dangerous men, extended its use to all parts of their immense railroad, and now oppose it as a barrier to the admission of men thus unfit for service, is the best evidence that can be adduced to claim for it a successful place among the efforts to render scientific truths of practical value to the world. It is hoped that the Reading Railroad will be sustained in its contest with its employes by the example so quietly conducted by the Pennsylvania, and that the reform so necessary for the travelling public and for those employes who carry their lives in their hands daily, may be conducted to a happy finish.

## MEDICAL PROGRESS.

**SUNSTROKE AND ITS PREVENTION.**—The *Lancet* of July 30, 1887, gives the following advice, which is most opportune in the present heated term:

Several cases of sunstroke have recently been re-

ported from the west of England, and intelligence from America shows that deaths from this cause have also been remarkably frequent there. A few observations on this subject should, therefore, be not unseasonable at the present time. To speak of sunstroke as being due to more causes than one may sound at first sight rather like a contradiction in terms, but there can be no doubt that besides the principal influence at work in such cases there are others of real though secondary significance. In seeking to explain the causation of this morbid state we must, indeed, regard at least two different conditions as commonly acting together to produce the result. One of these is external heat, not necessarily that of the direct solar rays; the other is the presence in excess of impurities in the blood circulation, with a want of due nutrition in the tissues which it supplies. The consequence of this abnormal state of body is necessarily to delay the blood current, and the state of congestion thus engendered in the nerve centres of the brain and cord renders the latter unusually irritable to the action of external stimuli, of which external heat is, for the case we are discussing, the most important. It follows accordingly that prevention must include some care as to modes of living, as well as means of regulating or resisting heat from without the body. For example, the free use of alcoholic stimulants, which tends to impair nutrition, is no longer considered to be advisable; while tea and coffee, which check the formation of waste products, are proportionately valuable. Tight clothing about the chest is generally condemned as being likely to impede the aëration of blood in the lungs, and experience has proved that for a similar reason the imperfect ventilation of workrooms in warm summer weather is conducive to heatstroke. As regards protection against the sun's rays, it should be remembered that not only the head but the back of the neck must be suitably guarded in order to insure the traveller against the risk of injury. The wearing a damp handkerchief, or a leaf, such as that of the cabbage, next the head has also been found very useful. One word as to the immediate treatment of a case of sunstroke. In some instances, doubtless, not even the readiest assistance will save life, but in a case of need it is well that all should bear in mind that the most effectual form in which first aid can be rendered is the application of cold—as cold water, ice, etc.—to the head and neck.

FORMULÆ FOR ACID CALCIUM PHOSPHATE SOLUTIONS FOR THE TREATMENT OF TUBERCULOSIS.—FREUND, of Vienna, publishes the following, as used by KOLISCHER (THE MEDICAL NEWS of June 25, 1887, p. 710). For hypodermatic injections:

Calci. phosphorici neutral. . . . 5 parts.  
Aqueæ destill. . . . . 50 parts.

Add phosphoric acid until a perfect solution results; filter; add

Acid. phosphor. dil. . . . .  $\frac{1}{16}$  part.  
Aq. destillat. . . . . q. s. ad 100 parts.

For an escharotic effect upon tuberculous ulcers and indolent granulations, the following is used:

Calci. phosphorici neutral. . . . 50 parts.  
Aq. destillat. . . . . 500 parts.

Add phosphoric acid until a perfect solution is obtained; filter; add

Acid. phosphor. dil. . . . . 60 parts.  
Aq. destillat. . . . . q. s. ad 1000 parts.

Gauze may be soaked in this fluid, and used in dressing tuberculous fistulæ and pockets.—*Wiener medizinische Presse*, No. 24, 1887.

COCAINE IN HAY FEVER.—DR. BISHOPS, of Chicago, in the First Prize Essay of the United States Hay Fever Association for 1887, writes as follows on this subject:

Cocaine, in a four or ten per cent. solution, applied with a camels' hair brush, gives speedy relief. The patient should never omit clearing the membrane of mucus before applying any local remedy, else the medicine is diluted and prevented from acting on the seat of irritation. Better than the solution is a six or ten per cent. powder of cocaine and sugar of milk, applied to the nasal cavity with a pocket insufflator or powder-blower, small enough to carry in the vest pocket and to be used unnoticed the instant an attack threatens. The vulcanite tip of the soft rubber tube should be applied to the lips, when a gentle puff of the breath will blow a cloud of the anæsthetic powder into the nasal cavity, when the hard rubber tube is properly directed. This instrument is constructed after my large office insufflator, which is operated by a rubber bulb containing soft-rubber valves. The effects of cocaine may last several hours, but repeated applications may be necessary to keep up continuous insensibility of the membrane during prolonged attacks. However, it should be known that some persons possess an idiosyncrasy which forbids the use of cocaine. The primary action may produce anæsthesia and anæmia of the membrane, regularly, but the bloodvessels may become dilated and remain so, instead of returning to their normal calibre as they do in most cases. This condition of secondary hyperæmia is attended with intense hyperæsthesia and all the symptoms of severe hay-fever. Fortunately there seem to be few who are so distressed by this remedy, and I have employed it in many cases of various diseases without observing any disagreeable symptoms.—*Journal American Med. Association*, July 23, 1887.

THE TREATMENT OF DIARRHŒA BY CANNABIS INDICA.—DRS. BOND and EDWARDS give the following prescription in the *Practitioner* for July, 1887, which they have found very useful:

R.—Tincturæ cannabis indicæ . . . ℥x.  
Liquoris morphinæ . . . . . ℥v vel ℥x.  
Spiritus ammoniæ aromatici . . . ℥xx.  
Spiritus chloroformi . . . . . ℥xx.  
Aquam . . . . . ad 3j.

To be repeated every one, two, or three hours, according to circumstances. Directions: *No food for several hours, but a little brandy and water.* We have not seen one case run on to a fatal issue under this treatment.

THE DANGERS OF HYPNOTISM.—LARROQUE expressed the following views before the Paris Medico-Psychological Society at a recent meeting: In Paris, as in other places, hysterical patients are put asleep and



suggestions made to them, but many times without effect, and sometimes unfortunate results have occurred. I cite amongst others, the case of a young girl subject to slight vomiting. The doctor, knowing that he had to do with an hysterical patient, made use of hypnotism, in which he was well versed. On awakening, the girl had a contracture of the foot, which remained for some months. Neither putting her to sleep nor suggestions could make this contracture disappear. Afterward it was followed by difficulty in walking, by atrophy of certain muscles, by the retraction of the tendo Achilles, and perhaps by an adhesion of the joints. This contracture ought not to surprise us when we think of the neuro-muscular hyperexcitability in certain phases of hypnotic sleep, especially in the lethargic state, when the lightest touch or breath may produce a contracture which ought to be instantly undone. Here we have a young girl the victim of hypnotism; such cases are numerous.

It does not stop there. It is averred that, in causing hysterical patients to sleep, their mental derangement is confirmed. By hypnotism we can bring on mental disturbance of which the last term is that of hysterical insanity. Moreover, if these patients are often put to sleep, they can in the end fall asleep of themselves; consequently these intellectual troubles can only be accentuated. These grievous phenomena may appear, not only after repeated experiments, but even after one trial. For example, let us take the case communicated to me by Dr. Deligny. A young girl after the first hypnotic séance remained during three weeks in a state of complete stupor. I have said enough to prove the dangers of these experiments, which are not always attempted for a praiseworthy aim.—*Annales Medico-Psychologiques*, May, 1887.

**CORROSIVE SUBLIMATE IN THE TREATMENT OF DIPHTHERIA.**—STUMPF has used the following prescription with excellent results:

R.—Sublimat. . . . . gr. 3.  
Aq. destil. . . . .  $\frac{3}{4}$  5℥.  
Aq. menth . . . . .  $\frac{3}{4}$  1.

The cavity of the throat was sprayed with this every three hours.

Thirty-one cases were so treated, with but one death. No ill effects were observed from the treatment excepting salivation, which was not severe, and persisted only three or four days.

The temperature fell under the treatment.

As to the amount of fluid which could be safely used, one drachm of the fluid is enough for one application. When a solution of 1 to 2000 was used, fifty inhalations would give a maximum dose, of one and a half grains of sublimate, for an adult.

In children older than six years, 1 to 1000 solution was used; for children between two and six years, 1 to 2000; in children under two years of age, 1 to 4000 or 1 to 3000.

Inhalations with a hand-spray are best given for the first five times, hourly; then for five times every two hours; then every three hours until the symptoms are mitigated.—*Therapeutische Monatshefte*, April, 1887.

**COCA CIGARETTES.**—DR. NACHTIGALL confers on the excellent properties of coca, especially of the wine, in

alleviating hunger, stimulating the system, etc., which properties manifest themselves especially when taken while on a long march or while enduring other hardships. Later on, he recommends an entirely new preparation of coca—the cigarettes. In his discourse he says that, first of all, the very agreeable and mild taste and odor of coca, which admirably adapts it to this preparation, deserve mention. After he himself and some of his acquaintances tried them, he gave them to asthmatics; then he used them for catarrhal affections of the respiratory organs, and also for megrim of the nervous form. He is of the opinion that the good practical results which he invariably obtained were due to the anæsthetic action of the coca smoke upon the nerves of the relative mucous membrane. No disagreeable after-effects were noticed, so that persons who are susceptible to the action of nicotin in ordinary tobacco can smoke them with impunity. The doctor is convinced that these cigarettes will soon supplant those made of belladonna, hyoscyamus, stramonium, etc., and strongly urges a trial of them.—*Pharmaceutical Record*, June 15, 1887.

**THE TREATMENT OF CHRONIC ECZEMA OF THE VULVA IN CHILDREN.**—Apply three times daily a two per cent. solution of carbolic acid to the affected parts.

Once each week touch the diseased surfaces with ordinary acetic acid.

If ulceration occurs and becomes of some depth apply a dressing of

Iodoform (finely powdered) . . . 1 part.  
Alum . . . . . 2 parts.

—*Journal de Médecine*, June 26, 1887.

**PAINLESS EVISCERATION OF THE EYEBALL.**—DR. MULES, of Manchester, describes the following simple procedure in the *British Medical Journal* of June 4, 1887:

The pain is due to a rapid pouring out of serum into the subcleral space, with subsequent infiltration and tension of the orbit; it is a pressure, not an inflammatory pain. To avoid this, after completing all the steps of the operation as hitherto conducted, cut the external canthus, burrow freely back into the orbit with a pair of sharp scissors to the back of the sclera, taking special care to open the subcleral space; introduce an antisepticised horse-hair drain, the cut ends just passing through the cut canthus; apply a dry, thin, absorbent pad, and an ice-bag over all.

**OPIUM AND BISMUTH FOR DIARRHŒA:**

R.—Bismuth. subnit. . . . . 3 2½.  
Opil (crude) . . . . . gr. 3.  
Essent. anisi . . . . . gtt. 2.

Div. in chart. 10 in number.

Sig.—One or two powders daily, before meals.

—*Journal de Médecine*, June 26, 1887.

**A NEUTRAL HYDROCHLORATE OF QUININE.**—CLERMONT has obtained this useful salt by combining the neutral sulphate of quinine in solution with a solution of barium chloride, and filtering to remove barium sulphate formed. The liquid thus obtained, when evaporated at 100°, furnishes the neutral hydrochlorate; a salt which

is easily dissolved in its weight of water at ordinary temperature, and not being caustic, is well fitted for hypodermatic use. At a temperature lower than 5° C. the solution deposits crystals which dissolve at 15° C.—*Bulletin Général de Thérapeutique*, June 15, 1887.

**CHOLERA CONTAGIO. CONVEYED BY MILK.**—DR. SIMPSON, Health Officer at Calcutta, reports the following case in the *Indian Medical Gazette* for May, 1887, which we abstract as follows:

The following outbreak of cholera on board the ship "Ardenclotha," is interesting as showing how localized outbreaks in widely scattered parts of a town may break out simultaneously, and, though seeming to have no connection, may have a common origin which is neither due to any climatic condition, nor to a peculiar epidemic state of the atmosphere, but to taking into the system a something which has been polluted by cholera excreta.

Hearing from Dr. Birch that several cases of cholera had been admitted into the General Hospital of Calcutta from one of the ships moored in the river, it occurred to me that a good opportunity presented itself of investigating the cause of the outbreak. On visiting the ship we found that not only had there been five cases of cholera, but we were informed that a number of the crew had been suffering from diarrhoea, and the general impression was that the outbreak was due to entrance into the cholera zone and breathing a cholera air.

1. On investigation we found an outbreak of cholera on board ship which was traceable to the use of milk supplied by a certain milkman.

2. The milkman, who acknowledged and is known to adulterate his milk, dwelt in a hut at Howrah, adjacent to and in immediate vicinity of a cholera polluted tank.

3. A localized outbreak of cholera traceable to a tank polluted with cholera excreta.

From this inquiry I think it may be safely inferred that it is in the highest degree probable that the two simultaneous outbreaks of cholera, the one in Howrah on the land, and the other in the ship in the river, were due to the one and the same cause; that the patients who suffered on board ship and at Howrah had done so in consequence of having taken into their system (swallowing) some cholera poison previously contained in the dejections of a cholera patient; that in the case of the Howrah outbreak the medium for conveying the cholera poison was the water which had previously been polluted; that in the case of the outbreak on board ship the medium for conveying the cholera poison was the milk which previously had water added to it containing the cholera poison obtained from a cholera patient; and lastly, that the connecting link between the two outbreaks was the milk. This investigation also shows how cholera prevailing at a distance may establish itself simultaneously at two widely different places, and yet may be due to a common cause which is preventible.

**APOMORPHINE AND MORPHINE IN WHOOPING-COUGH.**—DR. P. F. FEDOROFF, of Arkhangelsk, states (*Proceedings of the Arkhangelsk Medical Society*, part 2, 1887, p. 92) that he has obtained good results in

whooping-cough by the internal use of the following mixture:

R.—Morphin. muriatic. . . . gr. ij.  
Apomorphin. muriatic. . . . gr. j.  
Acid. muriatic. . . . 3ss.  
Aq. destill. . . . 3viii.—M.

S.—A tablespoonful four times a day.

The paroxysms are lessened both in number and frequency after the first few doses of the mixture.—*British Medical Journal*, July 9, 1887.

**PURULENT PERITONITIS CURED BY INCISION AND DRAINAGE.**—In the *Revue Médicale de la Suisse Romande*, of May 15, 1887, p. 291, DR. E. CEPPI, of Porrentruy, publishes a remarkable case of chronic purulent peritonitis in a previously healthy and robust woman of twenty-nine, which was cured by abdominal incision with drainage. The disease proved to be of gonorrhoeal origin, small accumulations of Neisser's gonococci being found in the pus-cells. Similar microbes (diplococci consisting of ovoid cells measuring 0.85  $\mu$ ) were discovered also in the purulent discharge from the uterus. This case is the first in which the gonococcus has been found in the peritonitic exudation.

**THE BEST MATERIAL FOR NERVE SUTURE.**—MR. BOWLEY, of St. Bartholomew's Hospital, writes as follows in the *Lancet* for July, 1887: "The choice of a material for suture is naturally influenced by the same considerations as those which obtain in the similar operation of ligature of vessels, and just as in the latter it is advisable to use a tissue which will not act as an irritant and will be absorbed, so is a similar material indicated in the suture of nerves. In the majority of recorded cases catgut has been used, and I am inclined to consider that for small nerves carbolized catgut is the best material. In those cases, however, in which there is any unusual tension, or in which it is anticipated that, on account of any complication, it may be necessary to disturb the wound, I think that carbolized gut does not possess the proper amount of resisting power, and does not last a sufficient length of time. In such cases I should use by preference a more stable ligature, such as chromicized catgut, kangaroo tendon split into sufficiently small filaments, horsehair, or fine silk; I prefer the two former to the latter. After apposition has been obtained by suture, the limb should be fixed on a splint in such a position as to keep the injured nerve in a state of the least possible tension. The wound should be thoroughly cleansed, all sutures used should be first rendered aseptic, and every endeavor should be made to insure healing by first intention."

**COCAINE IN EVACUATING HYDROCELE.**—DUBUC used the following with advantage in a case where it was not desired to use an anæsthetic in puncturing a hydrocele. After the injection of this fluid the contents of the sac were evacuated and iodine was injected; the procedure was painless.

Aquæ destillat. . . . . 100 parts.  
Cocaine hydrochlorat. . . . . 1 part.  
Boric acid (pure) . . . . . 3 parts.

—*Annales des Maladies des Organes Génito-Urinaires*, July, 1887.

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SATURDAY, AUGUST 13, 1887.

## THE RESULTS OF GASTRO-ENTEROSTOMY.

In our issue of July 23d we took occasion to consider the results of pylorotomy, and we now wish to present the results of the allied operation of gastro-enterostomy. Both procedures have for an object the reestablishment of the continuity of the alimentary canal, or rather the relief of stenosis of the pyloric orifice. The first operation aims to be radical in its effect, the second only palliative. We endeavored to show in our last article that, as a matter of fact, neither operation was radical, and that the one which was attended with the least mortality, and the greatest amount of respite to the greatest number, was the one to be preferred.

Since the above opinion was expressed, an elaborate and highly interesting article has appeared in the *Deutsche Zeitschrift für Chirurgie* of June 22, 1887, from the pen of Dr. C. Rockwitz, of Strassburg, in which the results of gastro-enterostomy at the Strassburg Clinic are detailed, and the whole subject carefully considered. Altogether the operation has been performed 29 times, with 16 recoveries from the operation, and 13 deaths. Of these cases, 8 were performed by Prof. Lücke, of Strassburg, with 7 recoveries and 1 death, a success which is phenomenal. We thus see that 55 per cent. of the cases operated on have survived the operation, and 45 per cent. have perished, which affords a marked contrast to pylorotomy, which has a mortality of 72 per cent. when performed for all causes. When performed for carcinoma, gastro-enterostomy has proved fatal in 60 per cent. of the cases, and 40 per cent. have survived for longer or shorter periods. For cicatricial stricture, but 1 death resulted in 7 cases, and the most of those who recovered were

radically cured, and were freed from their distress and suffering.

In presenting any statistics in regard to the mortality of gastro-enterostomy, it must be remembered that in almost every case the operation has been performed for conditions which precluded resection of the pylorus; hence the mortality is far in advance of that which is inherent to the procedure; and, likewise, the continuance of the benefits in those who survived is materially shortened for the same reason. Of the 16 cases which recovered, 2 died in one month of marasmus, but with a respite from suffering for that length of time; 1 who was suffering from tuberculous ulceration and stricture of the duodenum, died of marasmus and peritonitis in two months, after having gained 11 pounds in weight during the first month; 1 died in three months, of marasmus; 1 in four months, after gaining 11 pounds in weight; 1 in five months, after gaining 5 pounds; 1 in six months; 1 in fourteen months, after gaining 7 pounds in nine weeks; whilst Rydygier reports one case alive and well seven months after operation undertaken for ulcer of the duodenum; and a second case radically cured from the effects of a cicatricial stenosis of the pylorus.

Socin, after resecting the pylorus for cancer, subsequently performed gastro-enterostomy, with the result of again relieving his patient from her sufferings, and with the gain of 11¼ pounds in four months. Lücke reports one case, operated on for a tumor of doubtful nature, well at the expiration of one year, and increased in weight 15 pounds; another case, by the same surgeon, as well and 3 pounds heavier, thirteen months after operation; and a third case, alive, well, and with a gain of 39 pounds, eighteen months subsequently. The best result yet reported, however, is that of Hahn, who performed the operation two years ago for supposed inoperable cancer, the patient surviving and being not only in good health, but about 54 pounds heavier than before the operation. One case is reported as having been discharged cured in thirty-seven days, and as the operation was for cicatricial stenosis, the result is probably permanent.

We see from the above-mentioned cases, that gastro-enterostomy, whilst it does not secure radical cures in the case of cancer, does palliate the distress to a remarkable degree, and in the case of cicatricial stricture it circumvents the stenosis and restores the patient to a condition of permanent health. As has been stated, the operation has generally been performed as the *dernier ressort*, frequently after attempts at removal, which have materially complicated the case.

We hold that resection of the pylorus is only to be thought of when there are no adhesions to surrounding parts, and when the lymphatic glands are



but slightly involved; in all other cases gastro-enterostomy ought to be performed as a primary operation without any previous attempts to break up the adhesions. If we examine the causes of death after this operation, we find that eight died of collapse and exhaustion in less than three days. One died of internal hemorrhage from the wound and one from peritonitis on the fourth day, whilst one died from exhaustion on the tenth day, due to vomiting caused by the formation of a spur, which obstructed the efferent limb of the bowel. Peritonitis and exhaustion caused the death of two cases on the twelfth and eighteenth days respectively.

As has been stated, the results of gastro-enterostomy as performed by Prof. Lücke are of the most surprising character; not only is his mortality very low, only 12.5 per cent., whilst that of other operators has been over 57 per cent., but the benefits secured by him are also brilliant, one patient with a non-malignant tumor being well one year after operation, another with cicatricial stenosis entirely relieved, whilst one woman with carcinoma survived the operation fourteen months, besides other cases which lived in comparative comfort for short periods.

The reason for the better results of Lücke is not very apparent, but appears to be due largely to the fact that he does not attempt resection of the pylorus if there are any adhesions to surrounding parts, or much glandular involvement, hence, the parts are in a very much better condition for gastro-enterostomy than when a great deal of manipulation has been unsuccessfully done. Another factor is his method of suturing, about eighty sutures being used in most cases, which secures accurate apposition of the edges of the fistula. Stress is also laid on the importance of seizing the first convenient coil of small intestine, instead of searching longer and disturbing the relation of parts in the manipulation necessary to find the first portion of the jejunum. Whatever the explanation may be, the fact remains that Lücke's results put those of all other operators in the shade. In some of the above cases prolonged vomiting, which eventually became stercoraceous, occurred, and marked benefit followed copious irrigations of the stomach.

The article of Dr. Rockwitz is one which will repay a careful study, but we can only cite the more important of his conclusions in regard to the method of operating. 1. All separation of adhesions, isolations, and manipulation in the abdominal cavity ought to be carefully avoided. 2. Previous preparation of the patient is of importance for the success of the operation. 3. The incision in the linea alba is to be preferred. 4. Use the first convenient coil of intestine for the formation of the gastro-intestinal fistula, and avoid much searching and manipulation in the attempt to reach

the plica duodeno-jejunalis. 5. The danger of compression of the colon by the mesentery of the raised small intestine is not sufficiently great to demand a complicated and dangerous modification in order to avoid it. 6. In the formation of the fistula employ the original simple method, as the formation of spurs and bends is not avoided by the more complicated procedures. 7. In order to secure a good functional action, the peristalsis of the bowel must correspond to that of the stomach. 8. For the formation of the fistula less depends upon the method of suture than upon its exact and proper execution.

#### THE ACID CALCIUM PHOSPHATE TREATMENT OF TUBERCULOSIS.

So frequent is the occurrence of local tuberculosis, and so serious are its permanent results when joints are attacked, that a mode of treatment which promises not only the cure of the local disease, but avoids the loss of motion so often resulting after other treatments, is worthy of consideration and trial. In *THE MEDICAL NEWS* of June 25, 1887, p. 710, we described KOLISCHER'S treatment by the injection of acid calcium phosphate, as reported to the Academy of Physicians of Vienna. We are now in a position, from his later reports, to give our readers the details of his method, and his conclusions as to its value, based upon the study of 500 cases.

From the *Wiener medizinische Presse*, No. 24, we learn that the solution used by injection contains 6.5 per cent. of acid calcium phosphate, with 1 to 1000 of free phosphoric acid; for the saturation of gauze, which is used in tamponing tuberculous fistulæ and dressing tuberculous ulcers, a solution of 6.5 per cent. acid calcium phosphate containing 1 per cent. of free phosphoric acid is employed; the proportion of free acid is increased to 2 per cent. where an especially caustic effect is desired.

Previous to injection the surface of the diseased part is disinfected by mercuric chloride; the injection is made with a platinum needle introduced deeply into the tissues: if great pain results, cocaine may be added to the solution. The contents of a Pravaz's syringe may be given at one injection; all injections used were sterilized. The formulæ for these solutions will be found in the *Progress* columns of this issue of *THE NEWS*.

In the same issue of the *Presse*, FROSCHAUER states that he was led, when studying the influence of phosphoric compounds upon anthrax, to infer their power to influence tuberculosis. He cites the carnivora as less liable to many infectious diseases than the herbivora, and explains this fact by the acid calcium phosphate which is produced in the decomposition of nitrogenous food, before the formation of destructive ammoniacal compounds occurs. He

reasons that the administration of the acid phosphate will increase the natural resistance of the carnivorous organism, and greatly assist it in its struggle with tubercular infection.

KOLISCHER'S experience (*Wiener medizinische Presse*, July 17, 1887) leads him to consider his method especially valuable with children, in whom, in many cases, speedy cures result, while others recover after prolonged treatment and overcoming of tedious complications. In rare cases it is without effect. The gauze saturated with calcium phosphate solution has been found an excellent dressing material in the treatment of caries.

Patients at about adolescence are among the most favorable cases; those whose disease has resisted other methods of treatment, and in whom extensive caries exists, were generally cured in from three to four months. The percentage of unimproved cases among these patients was very small. In older persons persistent treatment was much less successful. When tuberculosis was deeply seated it was not influenced until suppuration had reached the surface, when free drainage and tamponing with the gauze were generally successful. External tuberculosis among the phthisical was rarely cured; cold abscesses could be emptied, tamponed, and healed, but the general infection was uninfluenced.

ALBERT, in whose clinic this treatment is in use, believes that it is a distinct advance in surgery, and is destined to improve markedly the results obtained in localized tuberculosis.

#### A NEW AID IN THE DIAGNOSIS OF GASTRIC DISEASE.

It is a point of capital importance in the diagnosis and treatment of diseases of the stomach, to determine the motor power of the organ, or, to be more accurate, the period that elapses between the entrance of food through the cardiac orifice and its exit through the pylorus. The chemical properties of salol have enabled EWALD (*Wiener med. Presse*, 1887, No. 28) to accomplish this desirable object. The decomposition of this substance, and consequent appearance of salicylic acid in the urine, does not begin until it has passed into the small intestine. Salol may be mingled with the contents of the stomach and kept at the temperature of the body for hours without decomposition. This fact was determined by Ewald in twenty-five experiments. On the other hand, it is rapidly decomposed in the alkaline secretions of the intestine. In healthy persons salicylic acid appears in the urine in from one-half to one hour after the administration of salol. If this limit is overstepped, the delay may be attributed to pathological changes in the stomach. In eight typical cases of dilatation of the stomach studied by Ewald, salicylic acid could not be found in the urine until from two to three hours after the ingestion of

salol, and in two obscure cases the same observer was enabled to detect dilatation by means of this delayed reaction.

This interesting observation is applicable, not only as a means of diagnosis, but as a test of the effect of treatment; for, by means of it, Ewald has been enabled to determine that both electricity and massage hasten the passage of the chyme into the intestine.

#### THE VALUE OF STROPHANTHUS HISPIDUS IN HEART DISEASE.

THE very fact that this drug came before the profession of this country and abroad with the recommendation of FRASER, of Edinburgh, is to a certain extent a guarantee of its value, and nothing except its scarcity has retarded its more general use. Fortunately, the price has been reduced considerably since the first rush for its possession has passed away, and it now stands ready to enter our list of remedies, there to be tested side by side with its older fellows.

While the profession in general have as yet had but slight opportunity to test this drug for themselves, it has been tried with favorable results by Dana and Smith in New York, and by quite a large number of clinicians in England and on the continent. In the June and July numbers of the *Therapeutische Monatshefte*, DR. EMIL PINS, of Vienna, has an interesting clinical report regarding its value. Before calling further attention to his results, however, we will remind our readers that, according to the studies of Fraser and Brunton, this drug is nearly identical with digitalis in its action on the heart and blood-vessels, and in its influence on the secretion of urine. It contains an active principle, which is a glucoside, and is called strophanthin, but which has not been generally used, the tincture of the seeds being most commonly employed.

Pins has found that this tincture acted admirably in those cases of cardiac failure depending more particularly on valvular disease, and produced the most desirable results where the lesions caused dropsy and consequential need of increased renal action. Under the use of strophanthus the pulse, heretofore weak, rapid, irregular, and flurried, became slower and more powerful while the anasarca steadily decreased. In cardiac dyspnoea, both direct and indirect in its causation, it relieved the patient, and in every way proved itself to be the equal of digitalis. The belief reached by Dr. Pins is that strophanthus is eminently a heart tonic, and is especially useful in cases of chronic Bright's disease, and he also agrees with all the other recorders of bedside studies with this drug, that its diuretic properties are of great value.

The practitioner has heretofore often found to his alarm that his patient has gradually become somewhat accustomed to digitalis, so that the dose has

to be constantly increased, and has sorely felt the need of some drug which might possess similar powers. So much reliable evidence has now been brought forward as regards strophanthus, that it would seem that such a drug has at last been found, and the thanks of the profession are once more due to Professor Fraser for his last addition to our knowledge of therapeutical agents.

The Illinois State Board of Health, at a recent meeting, passed a resolution which defines "medical colleges in good standing" in Illinois as follows:

*Resolved*, That the phrase "medical colleges in good standing," in the first section of the Act to Regulate the Practice of Medicine, approved June 16, 1887, is hereby defined to include only those colleges which shall, after the sessions of 1890-91, require four years of professional study, including any time spent with a preceptor, and three regular courses of lectures, as conditions of graduation, and shall otherwise conform to the Schedule of Minimum Requirements heretofore adopted by the Board.

THE enticing yellow tea-bun is not the only article of diet that is enriched with chrome yellow. Maccaroni and vermicelli are frequently found in the shops tintured with this same derivative of lead; and these are sold to the unwary under the trade appellation of "egg-maccaroni," and the like. It is needless to say that this is a rank deception and fraud, and dangerous in the proportion that it deceives. Health officials should confiscate these "egg-foods" wherever found. Highly colored candies, and yellow sugar used for decorative purposes, have been found, also, to owe their attractive color to the fatal chrome yellow.

A PRELIMINARY programme has been announced for the meeting of the International Medical Congress. The Congress will be opened on Monday morning, September 5th, in the presence of the President, the report of the Secretary General submitted, and an address of welcome will be delivered by the Secretary of State, the Hon. Thomas F. Bayard. In the evening a conversazione will be held at the Pension Office. General meetings will be held on each morning of the week, and meetings of the sections will also be held on each day except Saturday.

Addresses will be delivered in general session, by Dr. Austin Flint, of New York, on "Fever, Its Causes and Rational Treatment;" by Dr. Mariano Semmola, of Naples, Italy, on "Bacteriology and Its Therapeutical Relations;" by Dr. P. C. Unna, of Hamburg, Germany, on "The Relations of Dermatology to General Medicine;" by Dr. C. Fielding Blanford, of London, on "The Treatment of

Recent Cases of Insanity in Asylums and in Private Houses;" by Dr. A. Lutaud, of Paris, on "The Influence of Discoveries of American Surgeons on the Development of Gynecology in Europe;" and by Dr. Neudorfer, of Vienna, on "The Military Medicine of the Present and that of the Near Future."

The social features of the meeting will be a reception by citizens on Wednesday evening, a general reception and buffet banquet at the Pension Office on Thursday evening, and a trip to Mount Vernon on Saturday afternoon.

A Bureau of Information has been established in the Hoffman House, New York, for the benefit of delegates from foreign countries.

THE Marine-Hospital Bureau is informed that smallpox and yellow fever are raging in Havana, Cuba. During July there were 104 deaths from yellow fever, and 112 from smallpox.

## SOCIETY PROCEEDINGS.

### AMERICAN OPHTHALMOLOGICAL SOCIETY.

*Twenty-third Annual Meeting, held at New London, Conn., July 20 and 21, 1887.*

(Specially reported for THE MEDICAL NEWS.)

(Concluded from page 162.)

#### RETINITIS PIGMENTOSA TREATED BY ELECTRICITY.

DR. M. STANDISH, of Boston, reported a case. The patient was a woman, aged thirty-three, myopic 1.50 D. She had worn correcting glasses since seventeen years of age. When first seen, in April, 1886, her sight had been failing for three years, for the last three months very rapidly, so that she could not go on the street alone after dark. Upon ophthalmoscopic examination characteristic patches of retinitis pigmentosa were found in the periphery of the fundus in each eye.

Her vision was right,  $\frac{12}{XL}$ ; left,  $\frac{12}{L}$ ; and the fields of vision were limited to less than 20° in the vertical and horizontal axes. The only treatment had been the use of the constant current, of such strength as could be easily borne. This has been applied, once in five days, during the last fifteen months. The present vision is, right,  $\frac{12}{XXX}$ ; left,  $\frac{12}{XV}$ ; and the fields have now vertical and horizontal axes of 70°. She now goes on the streets after dark with safety.

DR. H. DERBY, of Boston, reported a case in which there was poor vision, greatly contracted fields, and a large amount of pigment in the fundus, blue being the only color recognized. Under similar treatment, central vision improved, the fields widened, and the perception of red and green was reestablished.

#### ASEPTIC CATARACT EXTRACTION WITH IRRIGATION.

DR. C. H. WILLIAMS, of Boston, reported five cases of irrigation of the anterior chamber, after cataract extraction, with a one-half per cent. solution of chloride of



sodium, as recommended by Dr. McKeown. Instead of a syringe, a glass flask was used, having a capacity of 50 c. c. Two glass tubes were blown into the sides of the flask, one being drawn out to form a nozzle, which could be easily inserted into the anterior chamber; and the other, having a rubber tube and mouth-piece attached, so that the force of the stream could be easily controlled by the operator; and the flask holding enough fluid to complete the irrigation without withdrawing the tube. The irrigating instruments, and the two per cent. solution of cocaine, were sterilized in a steam sterilizer. This was not found to injure the anesthetic properties of the cocaine. The rest of the instruments and the dressings were sterilized by dry heat at 150° Cent. To determine the efficiency of a solution of biniodide of mercury, used for a preliminary washing out of the conjunctival sac, some experiments were made with plate cultures, at the laboratory of the Harvard Medical School, through the kindness of Dr. Ernst. Equal amounts of the biniodide of mercury and iodide of potash were dissolved in water, and added to 10 per cent. nutrient gelatine, to give a series of strengths up to 1 to 5000 of the biniodide to the gelatine. Ten days after exposure no growths of bacteria were found on any of these plates; although on unprotected plates, exposed at the same time, there was an abundant development of colonies of bacteria. Gelatine of the strength of Panas's solution (1 to 20,000) of the biniodide, showed after four days an average of 1.5 and 0.8 colonies of bacteria to the square centimetre of surface in two series of plates, while on unprotected plates, exposed at the same time, the average was 10.7. In two of the cases of extraction a suture was passed through the small piece of conjunctiva left at the apex of the corneal flap, to unite it to the conjunctiva above. This was found to hold the wound well in place. All the extractions were done without iridectomy; and a layer of iodoform was dusted along the edge of the closed eyelids just before applying the bandage.

DR. L. HOWE thought that we must learn the special resistance to microbicides, of each particular kind of bacteria. Then, again, experiments with pathogenic bacteria, made in the rabbit, may not indicate their effect on man. And their action on different parts of the same organism may be different. Bacteria that are dangerous when introduced within the eye may be comparatively harmless in the conjunctival sac.

DR. E. GRUENING had done within a year 16 extractions without iridectomy. In 11 cases a perfect pupil was secured; in 7 the iris had to be removed subsequently, or synechiæ were established. He washed out the conjunctival sac with a saturated solution of boric acid. Being able by manipulation to get this sucked into the wound in sufficient quantities, he had not used direct irrigation of the anterior chamber. No eye had been lost. He had also done 13 extractions with iridectomy during the same period.

#### CASE OF CONGENITAL, ZONULAR OPACITY AROUND THE FOVEA.

DR. O. F. WADSWORTH, of Boston, reported a case occurring in a female infant, aged eleven months, the sixth child of Jewish parents; first four healthy, the fifth had died when eighteen months old. The mother had been sick while carrying the last two children.

Father healthy. Its muscular system seemed undeveloped, and it took but little notice of things around it. During the first ophthalmoscopic examination it fixed its eyes on the mirror. The greater part of the fundus appeared normal, as was the fovea. Around the fovea was a zone of a diameter one and a half times that of the disk, of light-gray opacity, over which the smaller branches of the retinal vessels could be seen. Five months later the child took no notice of the mirror, or anything else. The optic disks were gray and devoid of small vessels. The pupils responded very faintly to light, and the child had grown thinner, muscles still undeveloped.

DR. H. KNAPP said that the case is a rare and characteristic one, of what appears to be a general arrest of development of the cerebral cortex. A case he had seen improved apparently during last summer, but in winter grew worse and died. The disks, which early in the case were pale, later became completely atrophic. An autopsy showed marked change in the cerebral cortex; and an arrest of development of the whole nervous system. He believed such cases would be more frequently recognized if ophthalmologists saw more of the cases of brain disease in infancy.

#### ALBUMINURIA OF PREGNANCY, SEPARATION OF BOTH RETINAS, REPLACEMENT.

DR. O. F. WADSWORTH had seen the case of a woman seven and one-half months pregnant, with œdema of the lids, urine loaded with albumen and containing casts; indistinctness of vision was found to be attendant on extensive separation of the retina in both eyes. After the use of one-sixth of a grain of pilocarpine hypodermatically, portions of the retinas became reattached. The dose was repeated and the retina became still more generally replaced. At the same time it became more affected with grayish opacity. Premature labor occurred with convulsions; and unconsciousness continued sixty hours, at the end of which time only movements of the hand before the eye could be seen. Two weeks later vision was improving, but there was extensive grayish opacity with patches of white exudation and small hemorrhages in the retina. Six weeks later there was no separation of the retina, and vision—right Jäger 13, left Jäger 5. Since that time it is stated that her vision has gradually improved.

DR. S. D. RISLEY thought there were cases of retinitis connected with the albuminuria of pregnancy, that we were not justified in allowing to proceed to term. He had reported one last year. Since then he had seen another where only the shadow of the hand could be perceived. This patient soon after aborted spontaneously in the sixth month. This was attended with unconsciousness, followed by aphasia. But the intense swelling of the retina and snow-bank exudation has entirely disappeared; and there has been great improvement of vision.

#### COLOBOMA OF THE IRIS, CHOROID, AND OPTIC NERVE.

DR. B. A. RANDALL presented drawings of three cases. It had been claimed that so-called underlying conus was a variety of coloboma; but one of these cases presented both coloboma and underlying conus. In one the disk seemed to present a second *porus opticus*. In another the bottom of the coloboma of the nerve

presented a refraction 13 D. higher than the neighboring fundus.

#### A PECULIAR FORM OF GRANULAR CONJUNCTIVITIS ASSOCIATED WITH ICHTHYOSIS.

DR. F. BULLER, of Montreal, reported two cases, both occurring in boys suffering from ichthyosis. The first, aged fifteen, had suffered from rheumatism and iritis, two years before, and six months later asthenopia. His parents were healthy and free from any skin affection, as were four older children; but two brothers younger than himself had the same condition of skin. The second was seven years old, and had weak eyes for two or three years. Parents free from skin disease. There was hyperæmia of the ocular conjunctiva. Compound hyperopic astigmatism. With correction, vision =  $\frac{6}{6}$ . In

both the conjunctiva of the lower lid was swollen, smooth, pale and glazed, and presented tenacious yellowish mucus. The upper lid was thickened, and its conjunctiva pale and smooth, but presenting flattened elevations, some mushroom shaped, semi-transparent, containing minute red dots, and extremely hard. Microscopical examination showed these masses to consist of highly developed granulation tissue, mainly white fibrous tissue. The first case was treated for a year with the various remedies for trachoma without benefit. He had seen other cases, presenting the same local lesions, which remained equally rebellious to treatment; but they had not been examined for skin disease. There seemed to be not the least tendency to acute exacerbations. The secretion from the conjunctiva was entirely different from that of ordinary trachoma. In the family of each there were several children, and none of the others had showed any affection of the eyes; so it could not be contagious. The changes were most characteristic on the upper lid, where the structure of the conjunctiva most nearly resembles that of the skin. He proposed that this affection should be called *ichthyosis of the conjunctiva*.

#### MODIFICATIONS OF THE OPHTHALMOSCOPE.

DR. W. S. DENNETT, of New York, showed his electric light attachment, or handle, for the Loring ophthalmoscope. It could readily be fitted to other forms of the instrument. Also a cheap and satisfactory battery for supplying the current for it or for the galvano-cautery. He found it much easier for beginners to get a good view of the fundus with the electric lamp as the source of illumination; and that the light was better and more manageable.

DR. L. HOWE showed an ophthalmoscope with a good lens disk which packed together into the compass of a small pill-box.

DR. S. D. RISLEY presented an ophthalmoscope with cylindrical lenses. He had modified Loring's ophthalmoscope by adding two slides, like those proposed by Dr. Jackson, which moved just back of the mirror. These contained convex cylindrical lenses with their axes parallel to the stem of the instrument. One slide contained 0.50, 1, 1.50, 2, and 2.50 D., and the other 0.25, 3, 4, 5, and 6. With these 0.25 D. intervals were obtained up to 3 D., and 0.50 D. intervals to 8.50 D. The spherical lenses were the same as those in the common form of Loring's ophthalmoscope with the ac-

cessory quadrant. The direction of the cylinder axis could readily be changed by merely varying the direction of the handle from the perpendicular. It was well known that in most cases of astigmatism the meridian of greatest refraction was vertical or very nearly vertical; and even when it was at right angles to this the cylinder could be adjusted to it. Some weeks' use of the instrument had shown it was capable of doing all he had expected of it. The instrument had been made by Queen & Co., of Philadelphia.

DR. S. M. BURNETT, of Washington, presented an ophthalmoscope with modifications, consisting, first, in a clip on the back of the instrument, in which the cylinders from the cases of test lenses can be inserted. A graduation around the edge of the mirror-plate shows the inclination of the axis of the cylinder. This, he claims, is very useful for verifying the diagnosis of astigmatism by other methods; and also enables us to see the fundus of an astigmatic eye free from its anomalous refraction. Second, two superimposed disks containing lenses which, singly and in combination, give 47 numbers (22 plus and 25 minus), with a regular interval of 0.5 D. up to 10.5 D. Third, a plane circular mirror, in front of which is swung a tilting mirror. The plane mirror does not interfere with the tilting mirror when in use; and when it is desired to use the plane mirror alone, the tilting mirror can be detached from its upper bearing, and will swing on its lower bearing, out of the way. The instrument is very light. It is made by Queen & Co., of Philadelphia, and its cost is about twenty dollars.

DR. O. F. WADSWORTH had for several years used a clip on the back of his ophthalmoscope to hold cylindrical lenses, and thought that Dr. H. D. Noyes had shown such an arrangement before the Society.

DR. BURNETT did not claim originality; he had merely combined in convenient form what before had been used on different instruments.

DR. E. JACKSON thought that since astigmatism blurs the retinal image only about half as much as the same degree of hyperopia or myopia, and since 0.50 D. was the smallest interval of practical value between the successive spherical lenses of the refraction ophthalmoscope, that the interval between the cylinders should be a whole dioptré. The Loring ophthalmoscope might be modified by adding the two slides, removing the quadrant, and placing the four lenses from it in one slide; and, in the other, using 1, 2, 3, 4, and 5 D. concave cylinders with their axes perpendicular to the stem of the instrument.

DRS. W. S. DENNETT and P. A. CALLAN had independently tried using a small Stokes lens back of the ophthalmoscope, but had abandoned it.

DR. B. A. RANDALL was still using with satisfaction the arrangement of cylindrical lenses shown to the Society a year ago.

#### PHOTOGRAPHS OF THE FUNDUS OF THE EYE.

DR. L. HOWE showed a series of these obtained from the living human eye. The exposure was about fifteen seconds. The original negatives had to be very small to get an impression strong enough. These were subsequently enlarged. The great difficulty had heretofore been to get a formula for a plate sufficiently sensitive to the red rays returned by the fundus.

## SMALL TEST LENSES AND TRIAL FRAMES.

DR. E. JACKSON exhibited a set of test lenses one inch in diameter. This decrease in the size of the lenses effected a reduction of more than one-half in the weight of lenses and trial frames. They were also made plano-convex and concave, giving less spherical aberration, making it easier to combine two of them, and capable of being used to neutralize accurately other lenses. Additional lenses were introduced. In the trial frames the temple was attached near the lower part of the lens-carrier, instead of opposite the middle, so that the lenses could be introduced and removed in the most convenient direction directly toward the temple.

## CASES AND VERBAL COMMUNICATIONS.

DR. JACKSON presented, for Dr. C. A. Oliver, pictures of two cases, one of double chorio-retinitis, with partial degeneration of the optic nerve, associated with curious lymph extravasation into the retina and vitreous; the other, of coloboma of the iris, lens, and choroid.

DR. D. B. ST. J. ROOSA offered the history of a case of recurrent paralysis of the motor-oculi, associated with migraine, in a young man, commencing at fourteen and increasing in severity.

DR. JOHN GREEN had noticed, after an attack of iritis, an increase in his own myopia of 1.50 D., which disappeared gradually after recovery. He had since noticed the same thing in some of his patients, and believed the myopia to be a consequence of the iritis.

DR. O. F. WADSWORTH had observed the same phenomenon.

DR. B. A. RANDALL had been consulted by a man, aged twenty-two, with myopia of 2.50 D., who complained of a spot before the right eye, which had first been noticed ten days before. He found a moderate choroidal trouble and a well-marked posterior polar cataract. He could not believe it to be of such recent origin until during the succeeding month, when it changed rapidly in shape, extended, and became obscured by a similar opacity starting on the anterior surface of the lens. Apparently there was no increase of myopia.

The following were

## ELECTED MEMBERS:

Drs. J. B. Emerson, of New York; H. F. Hansell, of Philadelphia; J. O. Tansley, of New York; T. Y. Sutphen, of Newark, N. J.; M. H. Post, of St. Louis; E. C. Rivers, of Denver City, Col.; George R. Cutter, of Brooklyn; D. C. Cocks, of New York; H. S. Oppenheimer, of New York; Charles McIlwaine, of Trenton, N. J.; David DeBeck, of Cincinnati.

The following were elected

## OFFICERS FOR THE ENSUING YEAR:

*President.*—Dr. William F. Norris.

*Vice-President.*—Dr. Hasket Derby.

*Secretary and Treasurer.*—Dr. O. F. Wadsworth.

*Corresponding Secretary.*—Dr. J. S. Prout.

To represent the Society in the Executive Committee, to arrange for the Congress of American Physicians and Surgeons, at Washington, in September, 1888, Dr. William F. Norris was chosen, and Dr. D. B. St. J. Roosa, alternate; with the proviso that such action did not bind the Society to approval of all the details of the present outline plan for such meeting.

The Society adjourned to meet at the Pequot House, New London, Conn., on the third Wednesday of July, 1888.

## CORRESPONDENCE.

## LETTER FROM STRASSBURG.

*Kephir—Acute Osteomyelitis—Fracture of the Skull—Gastro-enterostomy.*

A substitute for koumiss is coming very generally into use here and in Switzerland, which has the great advantage that it can readily be made in any place, and those who have used it largely speak very highly of it. It is the kephir of those Tartars who, having no horses, are dependent upon cows' milk from which to manufacture their milk-wine. Kephir is the product of the fermentation produced in milk by the presence of a peculiar ferment, when the fermenting milk is treated in a particular way. The method of its manufacture is kept as secret as possible by those who make a business of it. So successfully have they guarded their secret that when the hospital authorities attempted to make their own kephir, they were obliged to abandon the idea, as success did not crown their efforts.

Kephir contains less alcohol than koumiss, but is more nutritious. Kussmaul, Freund, and others here, are thoroughly satisfied with the results of its use, and are loud in its praise.

A man with an acute osteomyelitis in the head of the tibia was transferred from Prof. Kussmaul's department, to which he had been consigned as a case of pneumonia, to the surgical hospital. He had a few moist râles, a bloody sputum, and a slight consolidation, with an exceedingly high fever. The history was as follows: In attempting to jump from a street-car, while in motion, he fell on his knee, and bruised it against the paving-stones. The skin was scraped away from over the tuberosity of the tibia, but not to any great extent. At the time he paid no further attention to it, but on the second day he had a very severe chill. The symptoms of pneumonia, as above given, came on, and he was sent to the medical clinic. There the condition of his leg was noticed, and he was transferred to the surgical. He came in a semi-stupid, typhoid condition, with a morning temperature of  $104\frac{1}{2}^{\circ}$ . The leg was swollen, and highly inflamed, with deep fluctuation which could be readily determined in the upper part. It was now but the seventh day after the injury. He was given chloroform, and the collection of pus, which was situated between the periosteum and the bone, was cut into with great care, in order to avoid the joint. Several ounces of a thick, dark-colored pus escaped. The bone was denuded for a distance of two or three inches along the shaft. With a narrow chisel, an opening was made into the medullary cavity, where another collection of pus was found in a large abscess cavity, which was thoroughly cleansed and disinfected. A drainage-tube was drawn through the leg, a counter-opening having been made posteriorly, the entire leg enveloped in aseptic bandages, and the patient sent to the ward.

This was evidently a case of infection through the wound of the most acute character. The high fever was accounted for by the great pressure which both col-



lections of pus exerted upon their surroundings, and the lung symptoms to a possible secondary process in the lungs, due to the formation of fatty emboli.

A comminuted fracture of the side of the skull, complicated by fissures across the vault and base, was recently examined by Prof. von Recklinghausen, in the Pathological Institute. The man had fallen a distance of some twelve or fifteen feet, striking on the side of his head and right shoulder. Upon the third day he was brought to the clinic. All symptoms of concussion and compression had passed away. He spoke intelligibly in answer to such questions as were put to him, but a few hours later he died. There was a scalp wound on the right side of the head, some three inches above the ear. A large contusion, with subcutaneous extravasation of blood over the right side of the face, and consequent discoloration not only of the orbit, but of the entire half of the face. The shoulder and pectoral region of the right side were the seat of a similar contusion.

Prof. von Recklinghausen, as is his custom, gave with painful exactness a description of every external mark upon the body, as well as of all the pathological changes within. The main fissure ran in a half circle some two inches above the external auditory meatus, while three secondary fracture lines, branching out from this, passed across the vault, the one toward the orbit of the same side, another directly over the skull, almost to the external auditory meatus of the opposite side, while the third passed back across the occiput. Beneath the main fissure were several fragments, which were only held in position by the soft parts, and which were not depressed in the least. The largest was more than an inch long. Removing the skull-cap exposed a thin clot between the skull and the dura mater, in the region of the middle meningeal artery. The dura mater was torn in a line parallel to the artery, but a little behind it. Through this opening the clot extruded, and was spread out in a thin layer over the brain. Here there was no destruction of the brain-tissue, but beneath the loosened fragments the dura was torn, and a superficial destruction existed. The hemorrhagic extravasation passed into the external end of the Sylvian fossa. Slight extravasations of blood were found in the right posterior and the left middle and posterior fossæ, between the skull and the dura mater. None of the cranial nerves were injured.

The fracture of the base was in the right anterior fossa, almost entirely. It passed around three-fourths of the periphery of this fossa, when it crossed the tip of the pyramidal process of the temporal bone, and circling around the foramen magnum, ended in the jugular foramen. A comminuted fracture of the outer third of the clavicle, and simple ones of the first seven ribs, completed the list of broken bones. The examination of the internal organs revealed nothing of interest, except a perforation of the parietal pleura by a splinter of the second rib, and an extravasation of blood in the anterior mediastinum.

This case is of interest when it is considered that after a careful examination the surgeon diagnosed the fracture of the base, but not of the vault. The apparent damage to the brain was but slight in comparison to the injury of the skull. Usually with such extensive comminuted fractures there are symptoms of compression, or at least irregularities of the surface, that render the

diagnosis easy. In this case the loosened fragments escaped the examining hand, not only of the surgeon, but also of the distinguished pathologist, who palpated the head with great care before beginning his dissection.

The report of Dr. Rockwitz, one of the assistants in the surgical clinic, upon the gastro-enterostomies which Professor Luecke has performed, is by far the most brilliant record that has been made in this operation. Curiously enough, the same number of cases have been operated upon as in the clinic of Prof. Billroth, where, it is well known, Woelfler first made the operation in 1881. In Vienna eight cases have been operated upon, of whom five died shortly after the operation. Of Prof. Luecke's cases not a single one died immediately after the operation. One died two weeks later, of pneumonia and inanition. The cases previously reported numbered twenty-two; or, if the first case of Luecke be excluded, but twenty-one. Of these, seventeen were for cancerous strictures, and four for non-cancerous. Of the first category, twelve died from the operation, a mortality of seventy per cent. In the second category there was but one death, a mortality of twenty-five per cent.

Luecke operated six times for cancer, and twice for stricture. The cancerous cases were between the ages of thirty and fifty. With the exception given above, they all recovered from the operation, and lived at least several months in comparative comfort. One survived the operation fourteen months. The last one operated upon was living when the report was made. Both cases, of non-malignant strictures recovered, and seem to be permanently relieved; a mortality of but sixteen per cent. for the malignant cases against seventy per cent. from Billroth's clinic. Several of the cases were examined after death, and the relations of the intestines and the condition of the fistulæ were generally found to be satisfactory. In one case, however, the passage into the efferent arm of the loop of intestine was so distorted by cicatricial contraction that it was difficult to introduce a probe from the stomach into it. The adherent arm was distended with bile and pancreatic secretion.

The operation, which is necessarily tedious, lasted usually from an hour and a half to two hours. A portion of the stomach-wall was first selected that was free from bloodvessels. Two clamps with parallel arms are then so applied to a fold of the stomach as to prevent its contents from gaining access to the field of operation. In selecting the fold of small intestine, to be applied to the stomach, Luecke has never followed Woelfler, who directs that the upper end of the jejunum must be carefully sought for, and gives minute directions to be followed in securing the loop to the stomach-wall. All of this is regarded here as superfluous, and positively dangerous, as to follow these directions explicitly extends the time of the operation, and introduces new sources of failure. The rule here is to select the most convenient fold, and the object to establish a communication between it and the stomach as rapidly as possible. The result certainly justifies the teaching. A small portion of the selected fold is taken between the fingers, and emptied of its contents by gentle pressure. This portion is then secured in clamps similar to those placed upon the stomach. The formation of the opening and the union between the intestine and stomach are made as usual.

The twenty-nine reported cases give a mortality of

about forty-four per cent. from the operation itself. As this operation has proved so successful here, the tendency is to make it in preference to pylorectomy. This latter operation has never proved very successful, as its record of seventy-two operations for cancer, with an immediate mortality of fifty-five cases, or seventy-five per cent., conclusively shows. Therefore, Rockwitz would restrict the indications for the radical operation to that very small percentage of cases, the first class of v. Hacker's, in which we may hope for a permanent cure. The palliative operation has an immediate death-rate which is much less, and offers to all other cases as much hope as the radical.

STRASSBURG, July 11, 1887.

## NEWS ITEMS.

**TENEMENT HOUSE INSPECTION IN NEW YORK.**—The Health Department of New York City has set in operation a branch which is somewhat novel in sanitary work, as it unites the curative with the preventive practice of medicine. Thirty-seven young doctors, who have had their capacity established by the Civil Service Board, have been started out by the Health Department under orders to make house to house inspections of tenement houses, to discover if there are cases of illness which demand their attention, and to make a report on the sanitary condition of the premises. The doctors have authority to prescribe nourishing diet in addition to medicines, which are to be furnished free of cost when the family is too poor to pay for the supplies. Free passes to the excursions of the St. Johns's guild, are distributed at the discretion of these sanitary doctors. The city has appropriated \$10,000 for this service and the number of physicians in the corps will be increased to fifty very soon. In sending out these young medical inspectors, Dr. Bryant, the recently appointed health commissioner, used these words: "Teach the poor people that you are their friends, and you will inspire them with confidence. Do unto them what you would expect to have done unto you under similar circumstances. Do not be carried away with the idea that you are a Board of Health representative and have great authority, but be gentlemen. If you find that some families, where a contagious disease exists, have employed a family physician, avoid making a diagnosis merely to confirm that doctor's views. Such a course is unprofessional and unmanly. Learn the origin of the disease and advise with the regular medical attendant, as to the best methods to be devised to check a spread of the disease among the families in the same house or neighborhood."—*Sanitary News*, July 23, 1887.

**A NEW HALL OF ANATOMY AT VIENNA.**—A large and completely equipped hall of anatomy will shortly be erected for the Vienna Institute. It will be lighted by electricity, and furnished with every convenience for research; its estimated cost will be \$240,000.

**OFFICIAL EXAMINATION OF FOOD IN RUSSIA.**—A station is to be established in St. Petersburg for the examination of food materials offered for sale in the city. It will be under the charge of scientists appointed by the government.

**PROFESSOR VIRCHOW** will attend the Congress of Hygiene at Vienna, and will spend the remainder of his vacation in Egypt, in company with Professor Schliemann.

**DEATH BY OPIUM POISONING OF A CELEBRATED BONE-SETTER.**—HUTTON, of Queen Anne Street, London, a noted bone-setter, took "black drops" by mistake, and died on July 16, 1887. He was a man of powerful development, noted for his skill in "bone-setting" in defiance of surgery, and by the manipulations known to his craft.

**AN EPIDEMIC OF CONVULSIONS.**—A curious outbreak of convulsionist mania, analogous to those which occurred from time to time during the Middle Ages, is reported to have shown itself at Agosta, in the province of Rome. For some weeks past the country people have been laboring under the delusion that the district is under the immediate government of the Evil One, and before retiring to rest they carefully place on the threshold the broom and salt, which are credited with the power of keeping off evil spirits. Many of the younger women have epileptiform attacks, during which they utter piercing shrieks, and are violently convulsed. So serious had the condition of things become, that the syndic of Agosta found it necessary to inform the Prefect, who sent detachments of soldiers into the district in order to calm the apprehensions of the inhabitants. The contrast between this strictly physical way of dealing with the disease and the more imposing but less effectual religious ceremonies formerly employed must be interesting to historical students. As a natural consequence of this condition of mental perturbation, the country is overrun with quacks who claim to possess the only infallible remedy for the seizures. One of these nostrums, the vender of which was making a rich harvest from its sale, was found on analysis to consist of earth, snuff, and borax. Three medical men who were commissioned to investigate the cause and nature of this extraordinary affection, came to the conclusion that it was an epidemic of hysteria. They examined a number of the sufferers, mostly young women, some of whom were alleged to have vomited nails, horseshoes, and other equally indigestible substance, while others barked like dogs. Several of them were removed to Rome for treatment in the hospitals there, and measures have been taken to check the spread of the mischief. In a milder degree, this contagious form of hysteria is not infrequent, especially in places where ignorance and superstition favor manifestations of nervous disorder. The worst excesses of popular outbreaks, like the French Revolution, have been attributed to similar influences, and with every appearance of justice.—*British Medical Journal*, July 23, 1887.

**SECULARIZATION OF PARIS HOSPITALS.**—By a vote of 64 out of 71, the Municipal Council of Paris has determined to instruct the Administration of Public Assistance to place five hospitals, now controlled by Sisters of Charity, under secular charge before January, 1888. Among these are the Charité and the Hôtel-Dieu.

**DEATH FROM ANTIFEBRIN.**—Dr. E. von Quast, of Kansas City, reports in the *Kansas City Medical Index*

a death which occurred in his practice from the administration of antifebrin in four grain doses every two hours during a day. The physician's orders called for one dose in the morning; an evening dose to be ordered by the physician, if needed, at his evening visit. Cyanosis and collapse were the fatal symptoms.

**DEATH BY ELECTRICITY.**—M. D'ARSONVAL has been conducting some experiments for the purpose of preventing fatal accidents from the use of electricity. He has come to the conclusion that electrical currents are not dangerous until a power of 500 volts is reached, and he has devised an ingenious plan by which the extra current which occurs at the moment the current is broken, and which is the chief source of danger, may be annulled or neutralized. A V-shaped tube, made of an insulating material, is filled with mercury and is interposed in the main current. In order to close the main current a tap is turned and the machine is unprimed without giving an extra current spark. Or a glass tube is filled with mercury and dipped into a reservoir containing mercury. This tube is provided with a ground stopper, which not only suppresses the extra current, but interposes any resistance in the current. The invention seems to be original and ingenious, but unless considerable care be taken, even with its assistance, danger is still imminent. Another observation made by D'Arsonval is that extra currents from the dynamic electricity and alternating currents do not produce serious organic disruption of the living tissues like discharges of static electricity. This, however, is not a new observation. The special disruptive and fatal effect of the static discharge has long been known in this country, and was most fully brought out in Dr. Richardson's experiments on death by electric shock conducted in the Royal Polytechnic Institution in 1869. In those researches sheep and other animals were killed by the static discharge, and the cause of death was shown to be due to the sudden expansion of gaseous parts of the blood and tissues, by which organic lesions of the most extensive kind were induced. In one of this series of experiments the skull of a dead animal was fractured by the static discharge, and arborescent markings of external veins, distortion of large veins, rupture of the heart, ecchymosis, rupture of the stomach, and decomposition of the blood itself, from the same kind of discharge, were phenomena traced to disruption from gaseous expansion. At the same time the static discharge does not always kill. It may simply stun, or cause a temporary anaesthesia, or produce a state resembling catalepsy, followed by recovery.—*Lancet*, July 2, 1887.

**SEPTICÆMIA AT THE PRESENT TIME.**—DR. SENN writes as follows from Germany to the *Journal of the American Medical Association*, of July 2, 1887: "There is certainly a great deal of truth in the statement made by the famous Robert Koch, in answer to my question relative to the nature of septicæmia, that this disease is beyond the grasp of the pathologist in Germany, as antiseptics had succeeded in almost exterminating the disease in that country. I sympathize sincerely with the pathologists, but rejoice at the results obtained by Joseph Lister and his followers in expunging from the catalogue of diseases one of the most fatal and fearful

complications of the obstetrical and surgical wards. In the face of these facts who can doubt any longer the efficiency of antiseptic precautions in preventing infection? Who will dare to ridicule the honest, conscientious surgeon and obstetrician in his efforts to protect his patients against infection? Who will have the courage to recommend a pad of infective germs as a safe dressing for penetrating wounds of the abdomen? Let history, science, and the combined experiences of thousands of honest physicians and surgeons answer these questions."

**CARBOLIC ACID A SAFEGUARD AGAINST INSECTS.**—Many people do not know how easily they can protect themselves and their children against the bites of gnats and other insects. Weak carbolic acid sponged on the skin and hair, and in some cases the clothing, will drive away the whole tribe. A great many children and not a few adults are tormented throughout the whole summer by minute enemies. We know persons who are afraid of picnics and even of their own gardens on this account. Clothing is an imperfect protection, for we have seen a child whose foot and ankle had been stung through the stocking so seriously that for days she could not wear a leather shoe. All this can be averted according to our experience, and that we believe of many others, by carbolic acid judiciously used. The safest plan is to keep a solution of the acid. The solution should not contain more than 6 or 7 per cent., and it may be added to water until the latter smells strongly. This may readily and with perfect safety, be applied with a sponge. We have no doubt that horses and cattle could be protected in the same way from the flies, which sometimes nearly madden them, and it even seems possible that that terrible scourge the African Tsetse fly, might be kept off in the same manner.—*Lancet*, June 25, 1887.

**OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT U. S. ARMY, FROM AUGUST 2 TO AUGUST 8, 1887.**

SUTHERLAND, CHARLES, *Colonel and Surgeon*.—Leave of absence extended one month.—*S. O. 174, A. G. O.*, July 29, 1887.

ERYER, B. E., *Major and Surgeon*.—Relieved from further duty at Fort Lowell, Arizona Territory.—*S. O. 176, A. G. O.*, August 1, 1887.

BROWN, HARVEY E., *Major and Surgeon*.—Relieved from duty in the Department of Missouri, and ordered to Jackson Barracks, La., for duty at that post.—*S. O. 174, A. G. O.*, July 29, 1887.

GARDINER, JOHN DE B. W., *Captain and Assistant Surgeon*.—Granted leave of absence for one year, on surgeon's certificate of disability.—*S. O. 177, A. G. O.*, August 2, 1887.

**OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE HOSPITAL SERVICE, FOR TWO WEEKS ENDING AUGUST 6, 1887.**

IRWIN, FAIRFAX, *Passed Assistant Surgeon*.—To inspect unserviceable property at New York Marine Hospital, August 5, 1887.

CARTER, H. R., *Passed Assistant Surgeon*.—Granted leave of absence for six days, August 1, 1887.

BEVAN, A. D., *Passed Assistant Surgeon*.—Granted leave of absence for ten days, August 5, 1887.

NORMAN, SEATON, *Assistant Surgeon*.—Granted leave of absence for four days, on account of sickness August 5, 1887.